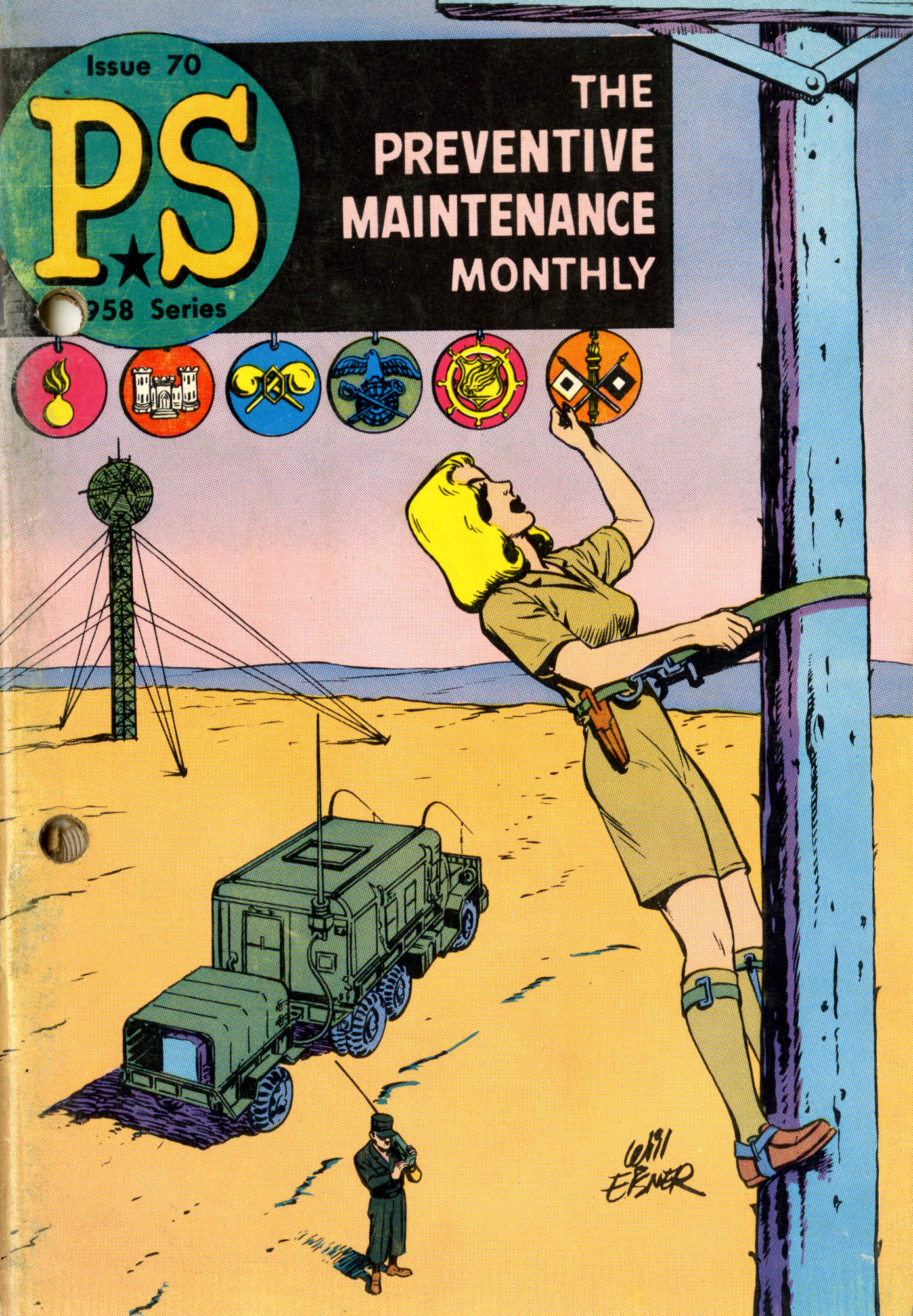

Issue 70
PS
958 Series
THE PREVENTIVE MAINTENANCE MONTHLY
CARL EBNER

SIGNAL CORPS

HEADQUARTERS
DEPARTMENT OF THE ARMY
OFFICE OF THE CHIEF SIGNAL OFFICER
WASHINGTON 25, D. C.

The Editor
PS Magazine
Raritan Arsenal
Metuchen, New Jersey

Dear Sir:

We in the Army Signal Corps take pride in having the opportunity to participate in PS.

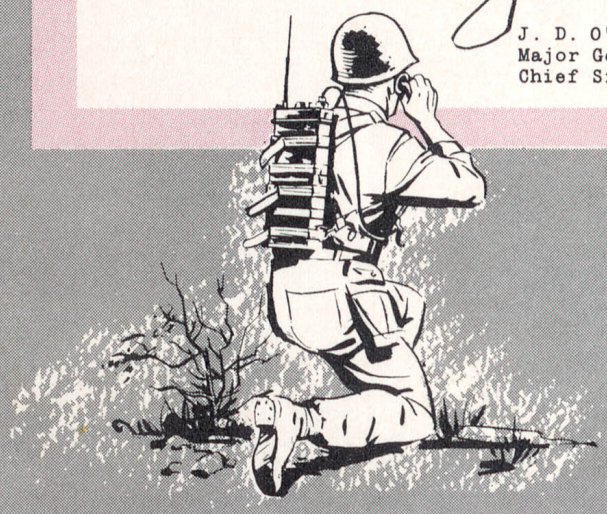
We are especially proud to be able to join the Army's other Technical Services in helping to extend the coverage of Army systems and equipment in your magazine's pages.

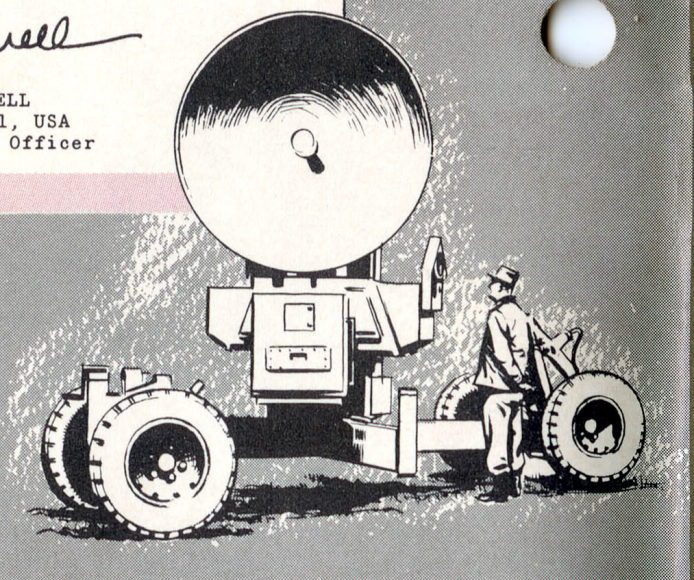
Much can be done for better maintenance and combat readiness of Army Signal equipment by the practical cross-sectional comment and field experiences provided the individual soldier through the pages of PS. I encourage each Army member to contribute his suggestions and problems on preventive maintenance of Signal equipment directly to the Editor of PS Magazine.

It is only through the combination of the personal efforts of every man in the Army that our systems and equipment can be properly operated and maintained. As PS has said, "We Have the World's Best Equipment -- Take Care of It." Let's get on with this important job.

Sincerely,

J. D. O'CONNELL
Major General, USA
Chief Signal Officer





SEE FIRST SIGNAL EQUIPMENT ARTICLE ON PAGE 2

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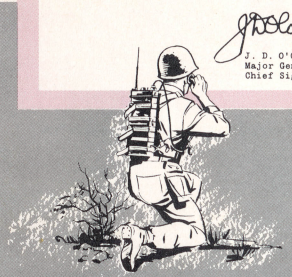

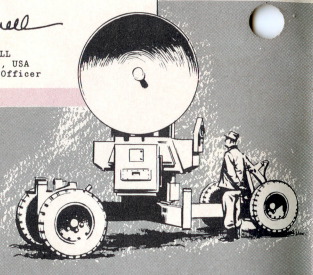

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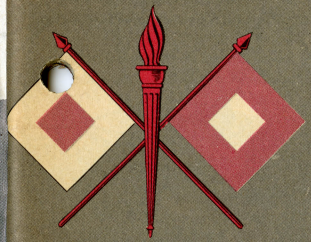

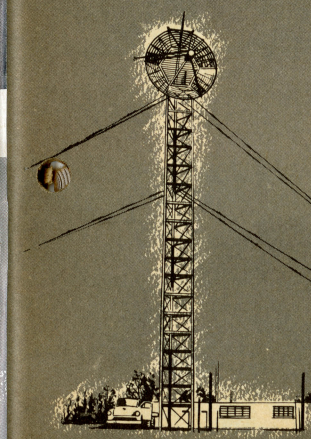

PS THE PREVENTIVE MAINTENANCE MONTHLY

Issue No. 70 1958 Series

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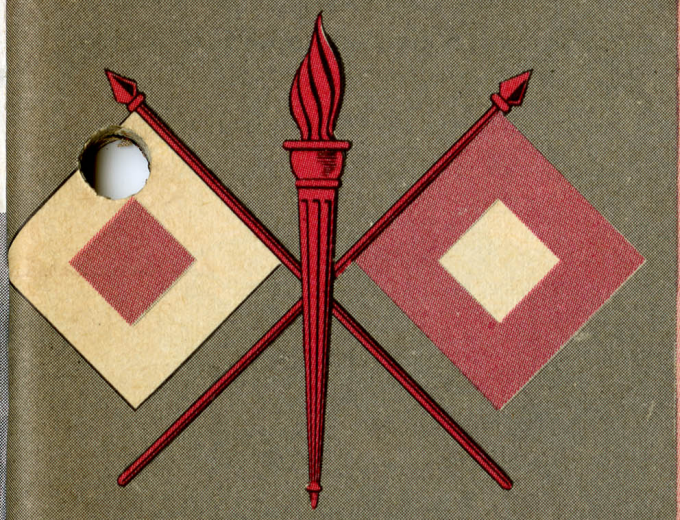
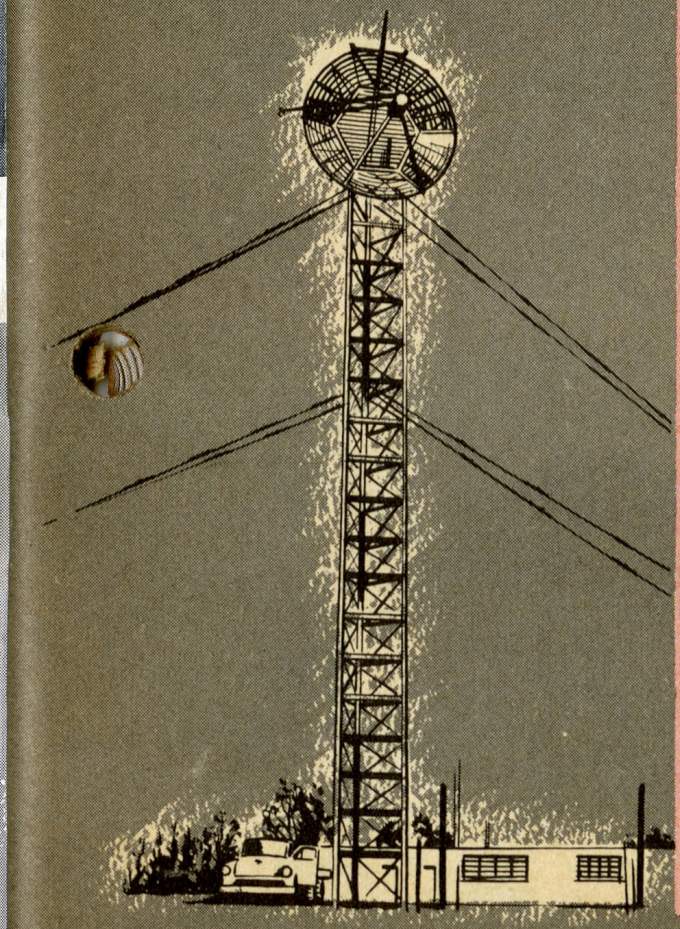
JOINS PS





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MISSILE BLASTS

Heard the latest tune from missile alley?

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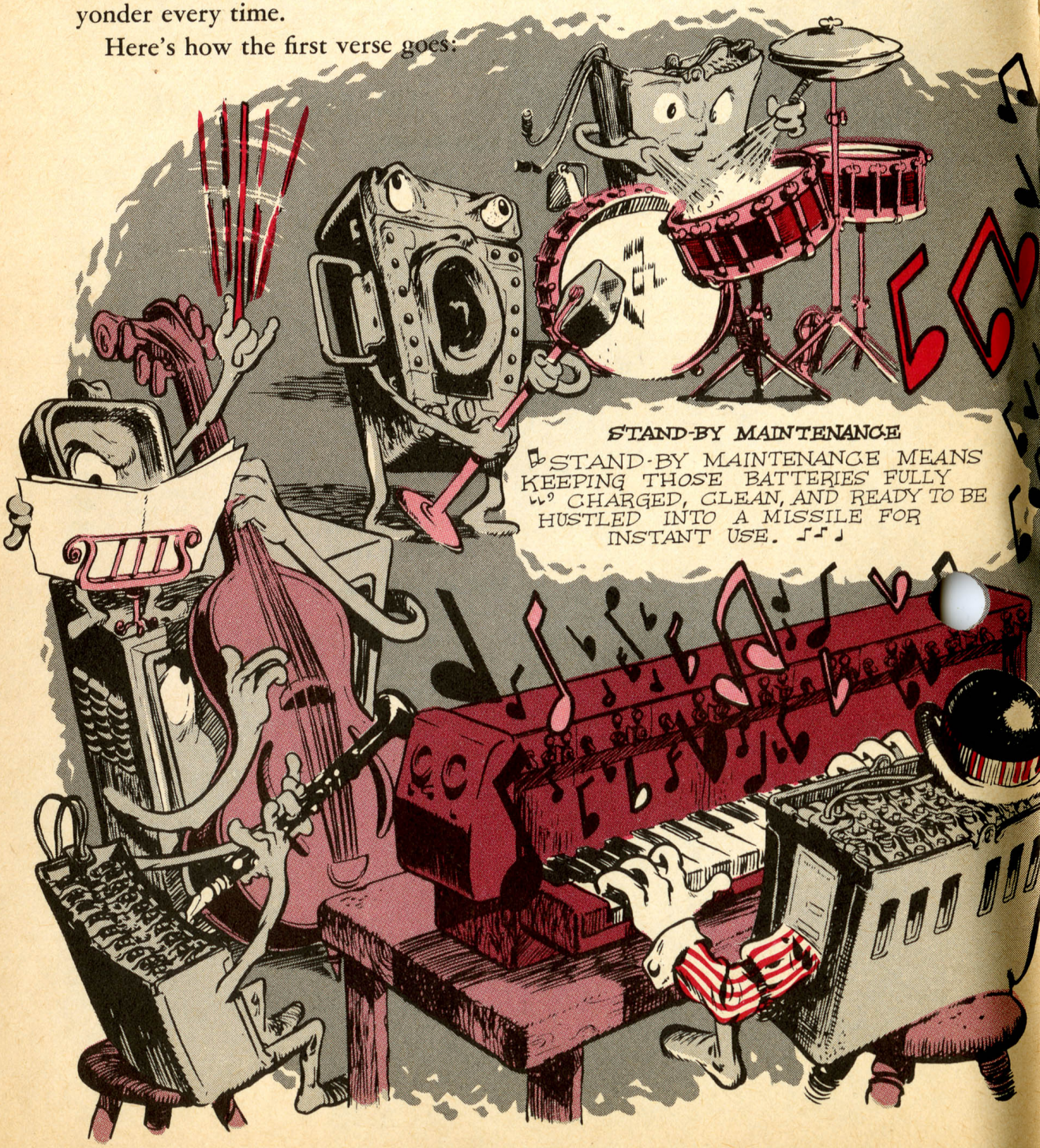
The words and music tell how to make those batteries do their job in the split second that they're called on to perform and bounce a missile into the wide yonder every time.

Here's how the first verse goes:



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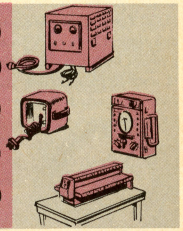
Here's how the first verse goes:

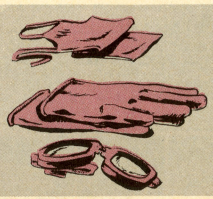
The equipment you need is handy and easy to use:

CHARGER, BATTERY, PP-775A/U or CHARGER, BATTERY, PP-775/U	FSN 6130-548-2936 (Sig) FSN 6130-548-2935 (Sig)
TEST SET, BATTERY, TS-737/U	FSN 6625-668-9475 (Sig)
MULTIMETER, TS-352/U	FSN 6625-242-5023 (Sig)
BATTERY CHARGING RACK, MT-1498/G	FSN 6140-568-2841 (Ord)



So leave us clean, check and charge. Open the windows. Let the wind blow in. Turn on the fans. In a word...ventilate. Then, before you put one hot hand on a cell or battery, dress for the job. Which calls for a small wardrobe:

RUBBER APRON	FSN 8405-234-9253 (QM)
RUBBER GLOVES Size 8 Size 10	FSN 8415-275-5729 (QM) FSN 8415-275-5731 (QM)
GOGGLES	FSN 4240-521-0586 (Sig)



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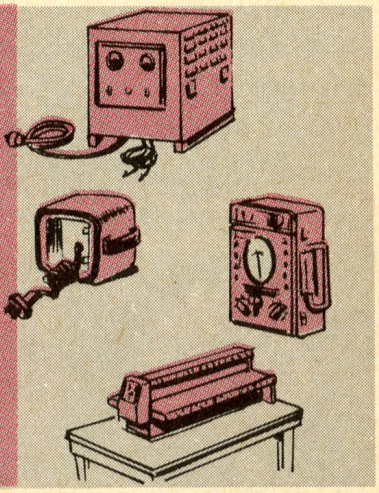

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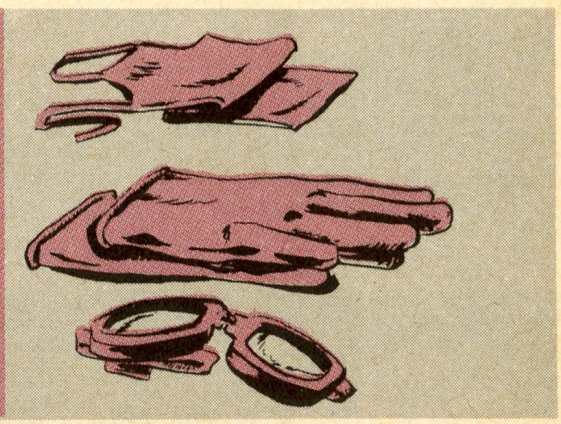

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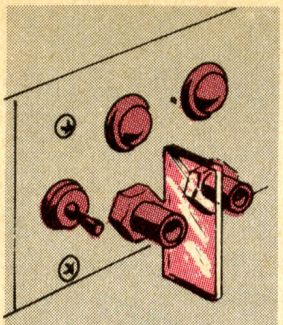
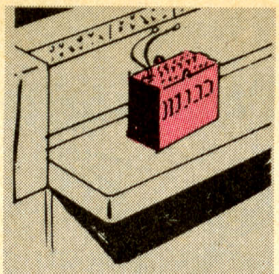
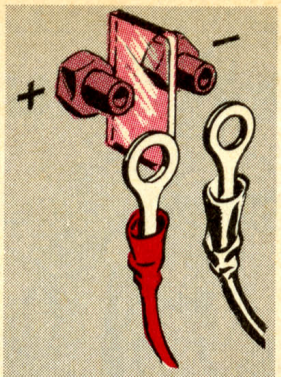


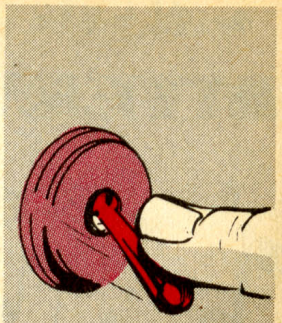
First get your charger ready for "Float Charge" like its instructions say.



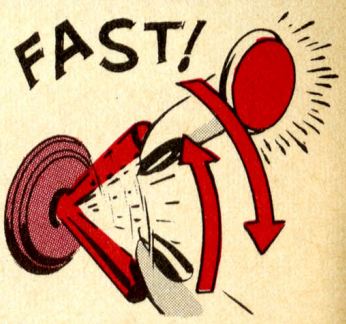
Then put your battery on the charging rack—making sure the FAST-OFF-FLOAT switch at the individual battery control panel you're using is on the OFF position.



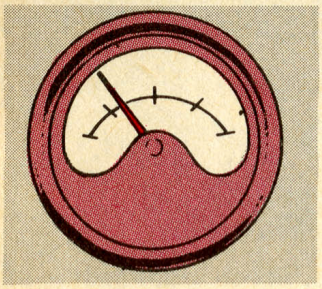
Slip the insulating sleeves off the leads and hook the leads up. RED on POSITIVE. BLACK on NEGATIVE.



And then flip the switch to FLOAT.



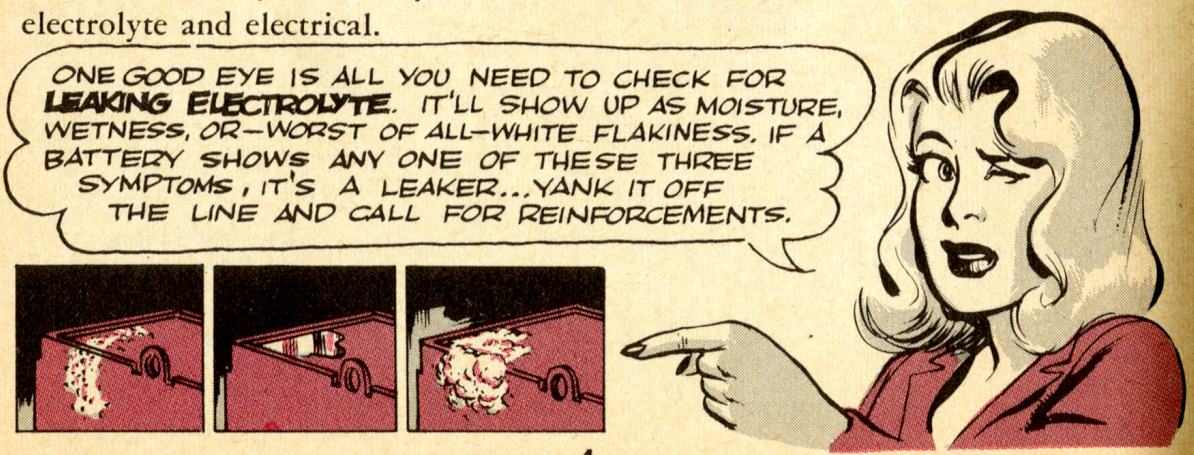
So how does a man know for sure that his battery is getting its float charge? A cinch. Flip the FAST-OFF-FLOAT switch to FAST for two seconds, maybe three, and then snap it back to FLOAT. Watch the bulb. If it glows a little for a few seconds, you're hooked up right. If not, either the bulb is burned out or maybe things aren't connected the way they should be.



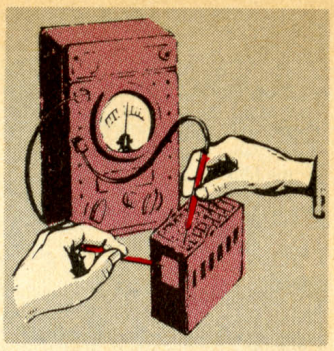
When things are hooked up OK, with the switch on FLOAT, the console voltmeter will read 33.6 volts, give or take .3 volts. That voltage value of 33.6±.3 v. shoots just the right float charge into your BB-401/U to keep it in stand-by readiness. And that two- or three-second FAST-FLOAT check every day takes only a few minutes and keeps you on the safe side.

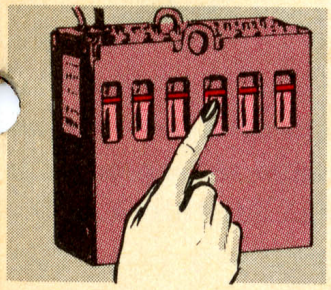
Once your battery is on the rack and hooked up and float-charging, a few stand-by maintenance checks are all that're needed to keep it ready.

Check it every seven days for two kinds of leaks—electrolyte and electrical.



You'll find out if a battery is leaking **electricity** by using the multimeter TS-352/U (0-50 V Scale). Make a connection between the battery's positive terminal and its nameplate—and then between its negative terminal and the nameplate. If there's any voltage reading in either hookup you know electricity is leaking—and you take that battery out of line soonest.

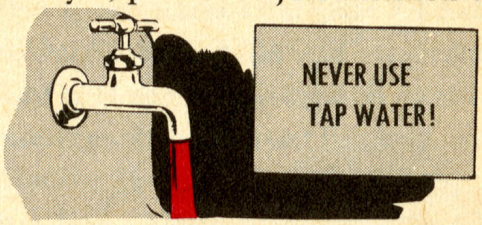




While you're making that weekly check for leaks, check for one more thing. **Electrolyte level.** Maybe the BB-401 needs a drink. The level of electrolyte should never climb higher than the red line on the side of each battery cell, and shouldn't disappear from sight below the bottom of the inspection window. Anywhere in between is legal.

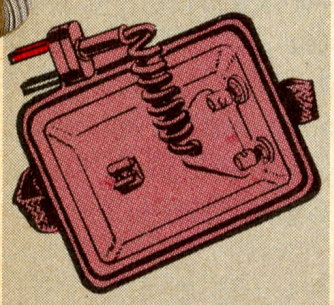
If a refill's needed, of course, a few drops of distilled water'll do the job. Your outfit has the syringe for the job. No electrolyte, please . . . just **distilled water.**

Incidentally, the only time you slip off the plastic battery cover is when you're adding liquid to the cells or testing voltages. Keep 'em covered otherwise.

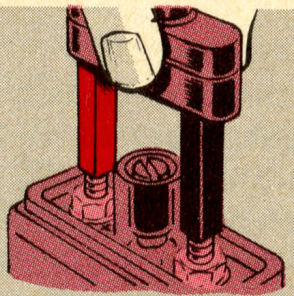


So now there's only one more check to wind up the stand-by maintenance verse of the "Battery Bounce" ditty that's sweeping missile alley. It's a test of the voltages in each cell. One check a month will do it.

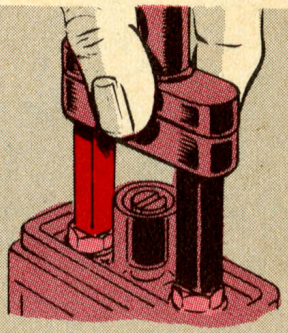
AND MAKE THIS CHECK ONLY WHILE THE BATTERY IS ON FLOAT-CHARGE... ON THE BATTERY CHARGING CONSOLE.



Use the battery test set TS-737/U.



Make sure the test prod is fitted across the terminals of the cell right: the red prong on the positive terminal and the black prong on the negative terminal.

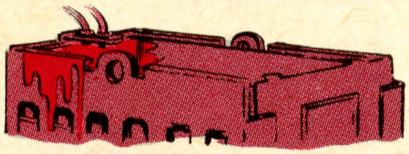


The tops of the cell terminal screws should snuggle into the holes in the ends of the prod prongs.

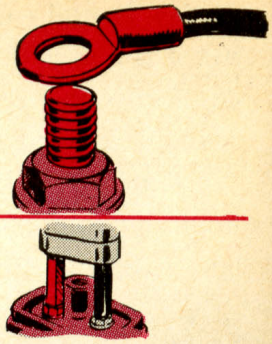
The reading should be **at least 1.32 volts.** A trifle higher is all right. Anything lower spells trouble. If one or more cells read less than 1.32 volts—set the battery aside.

You might be keeping half an eye peeled at the condition of the battery leads and lugs to see that they're in good condition. And when the word comes down that the battery is needed in a missile, it has to pass a quick 3-part check:

1. ELECTROLYTE LEVEL.



2. ELECTROLYTE AND ELECTRICAL LEAKAGE.



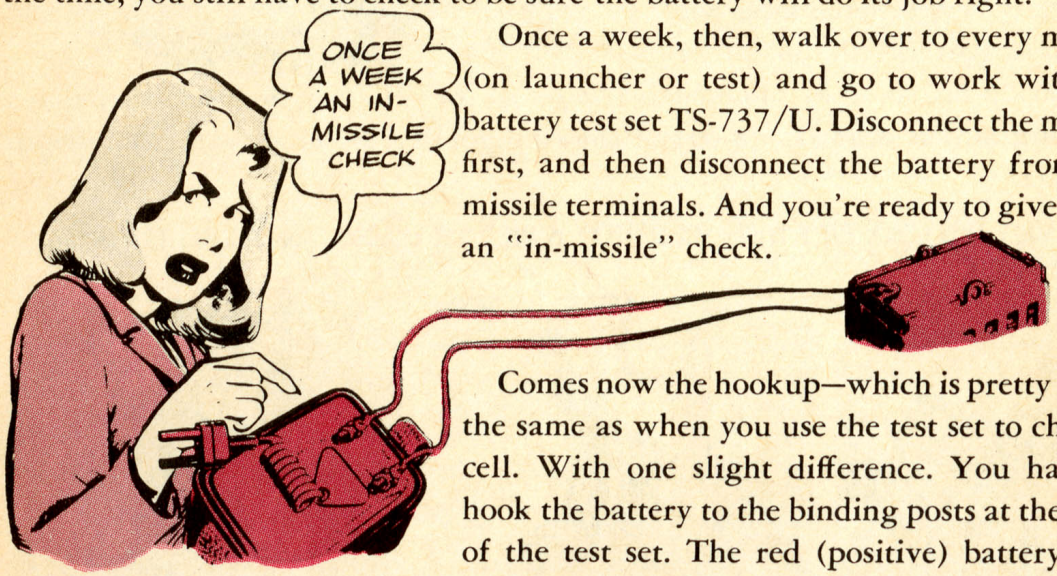
3. INDIVIDUAL CELL VOLTAGE.

Your BB-401/U just isn't ready for its mission unless it passes this last-minute check before you hustle it from the rack to the missile. And as long as it's in your possession . . . keep it on the charging console at FLOAT CHARGE.

IN-MISSILE MAINTENANCE

There's a familiar chorus here, gents. Every battery in every missile must be on FLOAT CHARGE constantly. Whether the missile is on the launcher or at the test station . . . FLOAT CHARGE 24 HOURS A DAY, 7 DAYS A WEEK.

And even though that gentle, FLOAT CHARGE is feeding into the battery all the time, you still have to check to be sure the battery will do its job right.



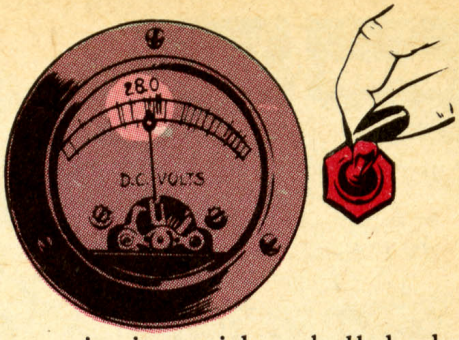
Once a week, then, walk over to every missile (on launcher or test) and go to work with the battery test set TS-737/U. Disconnect the missile first, and then disconnect the battery from the missile terminals. And you're ready to give them an "in-missile" check.

Comes now the hookup—which is pretty much the same as when you use the test set to check a cell. With one slight difference. You have to hook the battery to the binding posts at the back of the test set. The red (positive) battery lead goes on the positive post (which has a red insu-

NEW DOPE: NO SOAP

Best to forget about coating your BB-401/U batteries with anything—least of all electrical insulating compound. Liable to end up with a soapy gook if the potassium hydroxide electrolyte tangles with the compound. Besides, the hardware on those batteries is rustproof. Water is perfect as a cleaner. Just scratch that item on page 27 of PS 65.

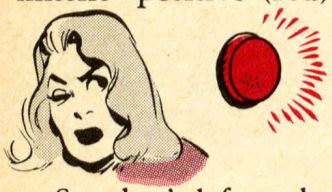
lation washer) and the black (negative) battery lead hooks on to the negative post.



You're ready to read. Throw the load switch. For about 15 seconds. You should have a reading of 28.0 volts. It should stay at 28.0 volts for as long as the switch is thrown. If a battery flunks this check—make like a dentist and yank it.

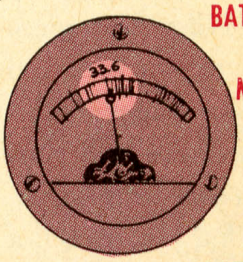
And since you've got the battery exposed, why not give it a quick eyeball check. Are the terminal lugs straight and clean? Are the battery leads worn or suffering from cracked insulation? If the answer to either question is yes—you guessed it! Out comes the battery. Replace it with one from stand-by.

OK. If your test shows 28.0 volts and lugs and leads are clean and straight, you've got a good battery. Unhook it from the test set and reconnect it to the missile—positive (red) to positive and negative (black) to negative.

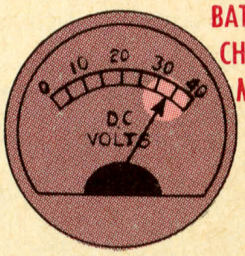


And then hook up the missile to the test station or launcher. Look for a glow on the charging light on the launcher operating panel—which lets you know that the missile is connected right and ready for use.

So what's left to check? Only the battery charger in the launching power cabinet and the accuracy of its battery charge meter. That meter, of course, you'll find on the control panel of the launching section.



BATTERY TEST METER



BATTERY CHARGE METER

Use the test leads from your multimeter TS-352/U for this quickie operation. Use 'em to hook up the battery test set TS-737/U with the battery charge meter (on the launching section control panel). The usual arrangement. The positive (red) lead connects the positive terminal on the back of the test set with the plus terminal on the front of the meter. Then link the test set negative terminal with the meter's negative terminal.

Both meters should read 33.6 volts, ±.3 volts. That's a strict limit. If the variation falls **inside** that allowance, simply make an adjustment. Turn the adjusting screw on the face of the meter to read **exactly** the same as the meter of the test set.

But if the voltage reading is **above or below** the limits of 33.6 ±.3 volts—the battery charger in the launching section power cabinet needs checking and adjusting.

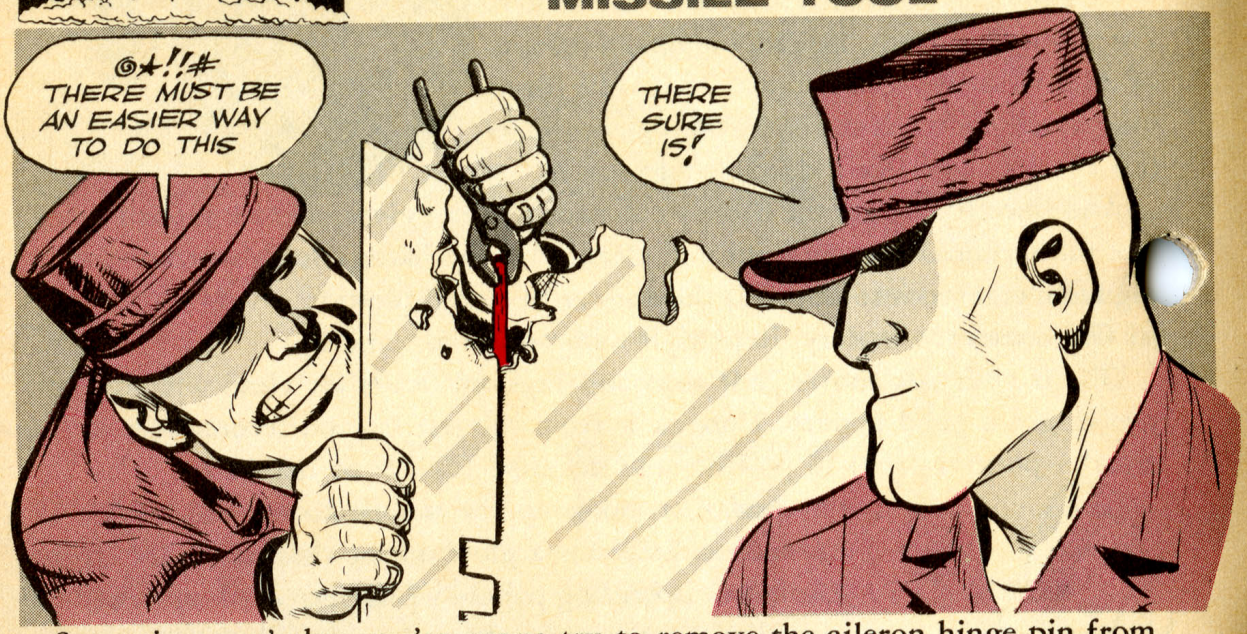
Of course, no battery stays in a missile more'n 30 days. Regardless. At the end of that time, it's got to be replaced with one from stand-by.

So ends the "Battery Bounce." The encore will come if the final button has to be pushed. Preventive and Stand-by Maintenance will make sure those BB-401's are ready to sing on cue.

MISSILE BLASTS

You can pin your hopes on this

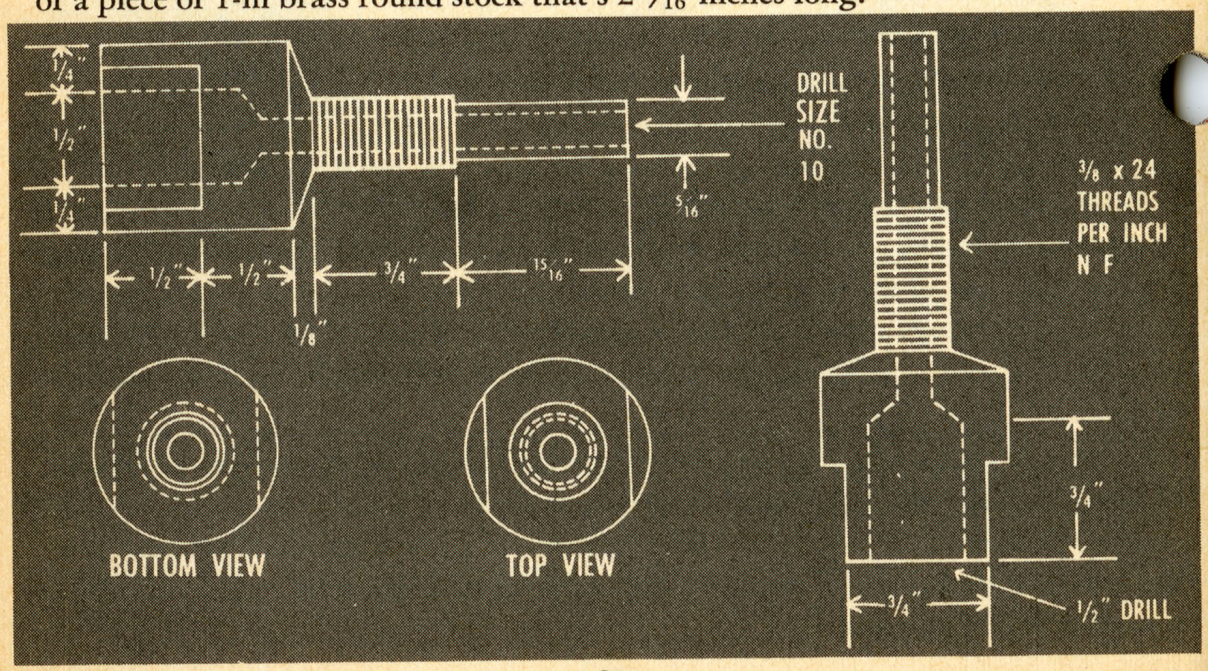
SPECIAL NIKE-AJAX MISSILE TOOL



Some time or t'other you're gonna try to remove the aileron hinge pin from your Nike-Ajax missile . . . and it won't be about to budge.

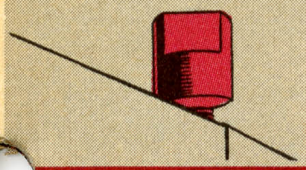
Matter of fact... the best you may do is rip the head off the pin—the pin gets seized in the main fin spar that tight. The pin is press-fitted in the head so you can see it doesn't take but a few stray muscles for the pin and head to part company. Then you're in a jam.

What you need is a tool that'll remove the pin. And, if you take these drawings to your support unit, you'll come away with the tool. Ordnance can make it out of a piece of 1-in brass round stock that's $2\frac{13}{16}$ inches long.

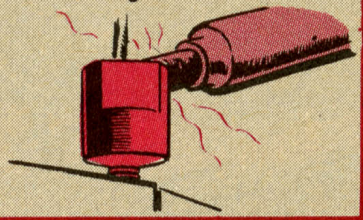


YOU USE THE HINGE PIN REMOVER THIS WAY:

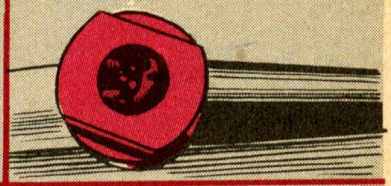
1. Screw it into the aileron—letting the top of the hinge pin go into the remover until you've got it finger tight.



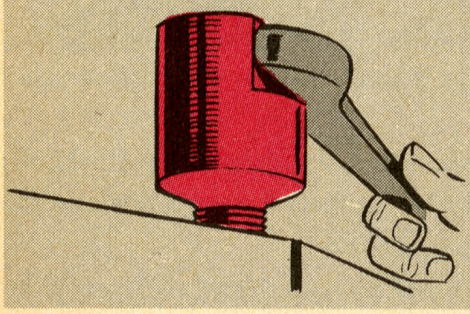
2. Hold a soldering iron against the remover until the remover is hot enough to melt solder.



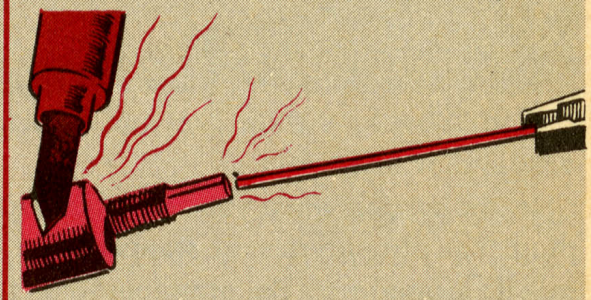
3. Stick enough acid-core solder in the remover so's it covers the top of the aileron pin when the solder melts.



4. After the solder hardens, unscrew the remover with a 3/4-in open-end wrench and the pin will come with it.

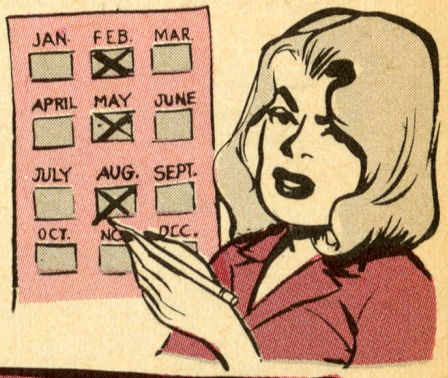


5. Once the pin is out, heat the tool enough to melt the solder and allow the pin to slip out.



Get a new pin under FSN 1420-800-1475. Before installing it . . . spread a real light coat of aircraft grease (FSN 9150-269-8255) on the pin. Remove the pin every three months and apply some more grease. That kinda treatment oughta keep the pin in good shape.

By the way—your supporting depot gets the grease from the Air Force through a Military Interdepartmental Purchase Request.

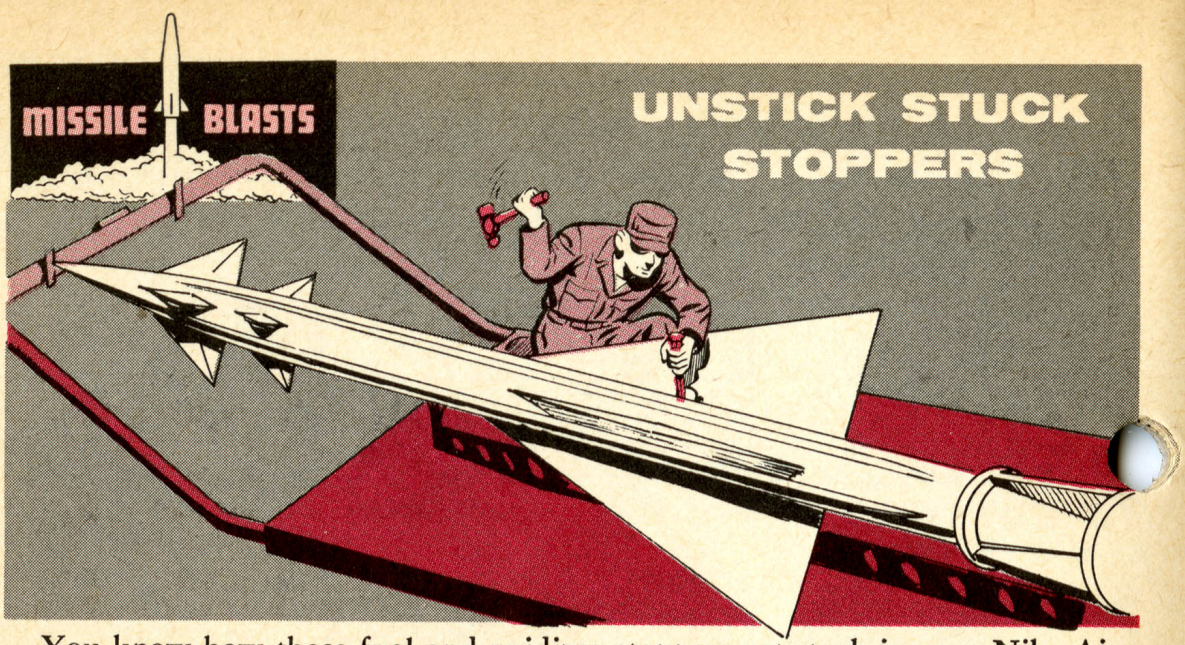


GET THE RIGHT OIL

There's electrical insulating oil and there's electrical insulating oil—but for you guys at a Nike-Ajax site, there's only one kind to use in your potentiometers.

You want Bayol D, which comes to you in a 1-qt can, FSN 9160-663-1360 . . . 1-gal can, FSN 9160-663-9841 . . . and 5-gal can, FSN 9160-663-9837. It's a Quartermaster deal.

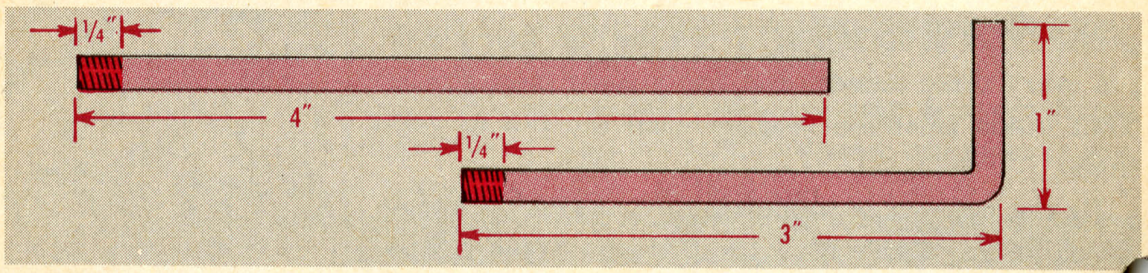
Note 10 to SB 38-5-3 (26 Aug 57) tells you Bayol D is to be used in place of the other insulating oils.



You know how those fuel and oxidizer stoppers get stuck in your Nike-Ajax missile now and again.

It can happen when you stick the stopper in the filler and then screw in the fill plug. The plug presses the stopper stuck. Might also happen when you move the missile around with the plug removed. The jarring can do it.

What you need is a tool that can be screwed into the stopper and then pulled—carrying the stopper along.

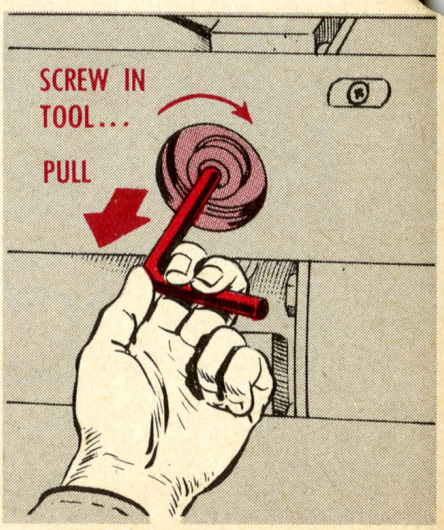


Your support unit can whip one up for you in no time. All it takes is a 4-in piece of 3/16-in dia steel rod that's threaded on one end and bent at a 90-degree angle at the other. Tell the man to use a 10-32 NF die for the threads and to run on about eight full threads.

The other end should be bent so's you get a 1-in finger grip.

Or, you can latch on to a 10-32 NF machine screw two or three inches long and braze a piece of rod onto it for a handle.

Next time you have a stuck stopper, screw in the tool and pull. No sweat.

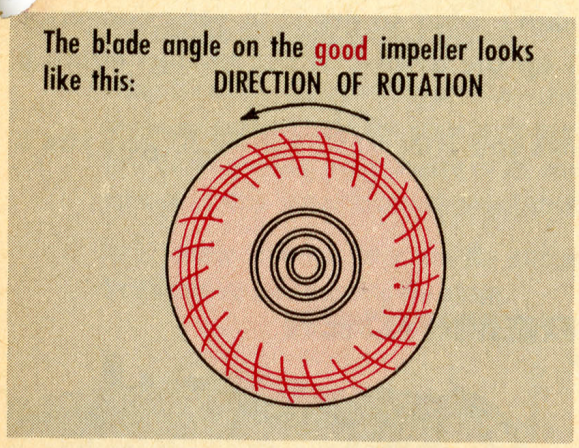


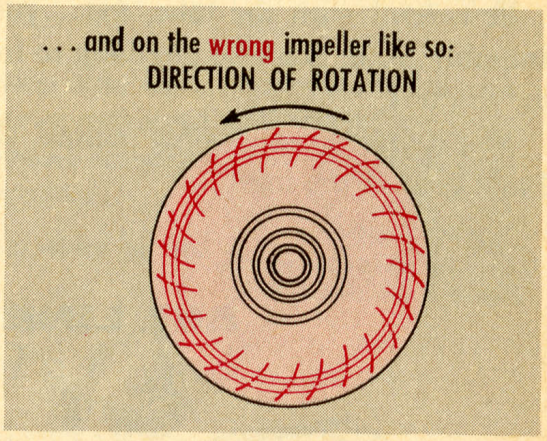
THE RIGHT ANGLE

Next time the support unit man drops around to your Nike-Ajax or M33 FCS site ask him to take a look at the blower assembly that's used to cool things off—like the power supplies in the computer.

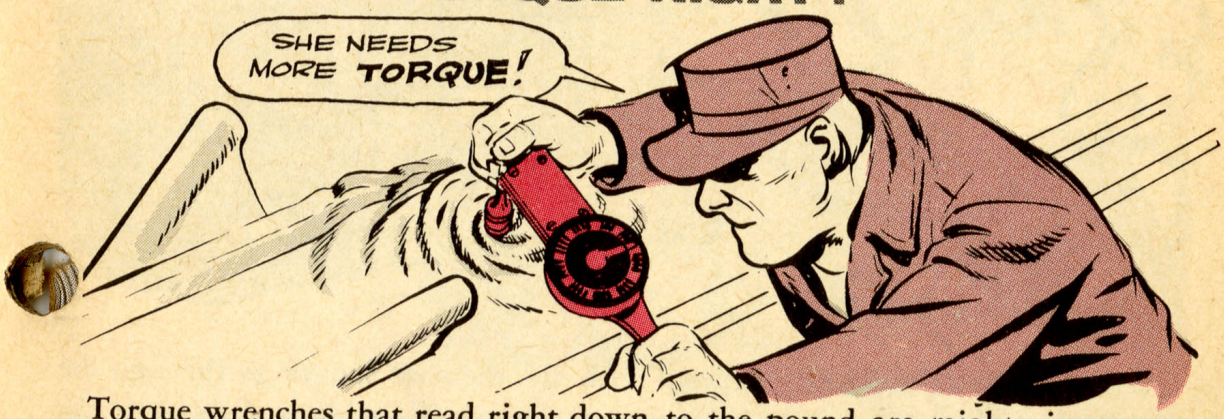
The word is that there are some blowers around with wrong blade angles on the impeller. The impeller spins around counter-clockwise all right, but it doesn't do the cooling job it should.

Have your support unit get a good impeller (FSN 4450-540-1024) and make a switch.





TORQUE RIGHT?



Torque wrenches that read right down to the pound are mighty important pieces of equipment—specially for a Nike-Ajax guy.

He'll tell you he works around a lot of soft metal—stuff that won't stand up to overtorquing. When a wrench is reading less than the actual pounds you're putting into your push, it means you're overtorquing when the pointer hits the figure called for.

And undertorquing is bad, too, especially when you're way off in the pounds you think you have.

It pays, then, to have your support unit check the accuracy of your wrenches now and again—say every two months. They have a torque wrench and tensiometer tester for the job.

MISSILE BLASTS

LUBE IN A TUBE

Run your finger down page 46 of Ord 7 SNL Y4-1 and you'll come across Lubricant, Blade Root.

You Nike-Ajax men oughta get to know the stuff because it's a good deal for keeping the waveguide shutter assembly in your tracking antenna in shape.

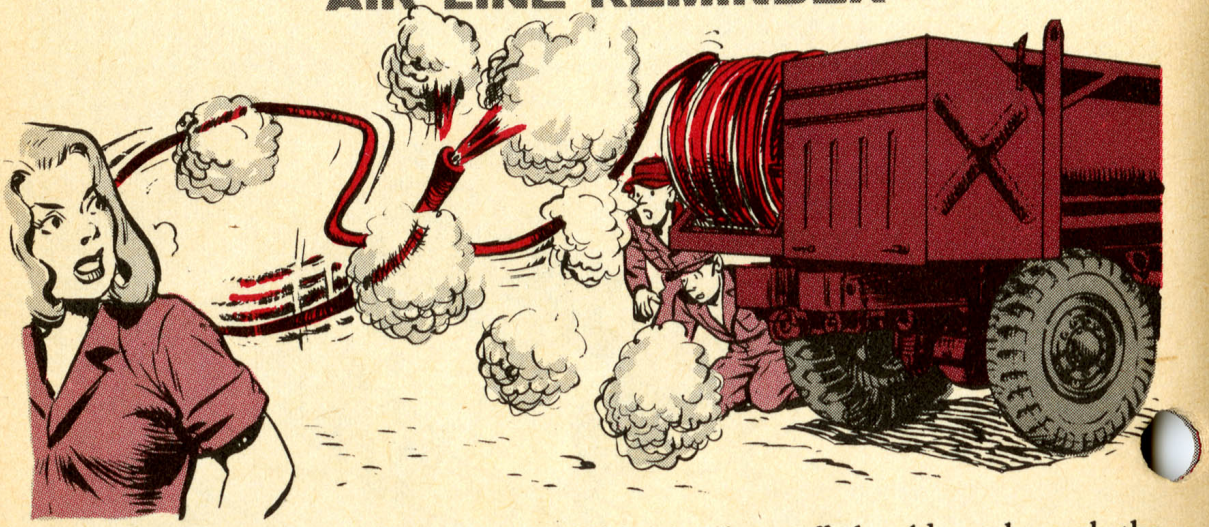
What you do is remove the shutters... clean the slots with a burnishing tool ... hit 'em light-like with some of the lube that's been dabbed on the end of a good finger... and then replace the shutters. Clean the slots once a month.

Be careful with the lube, tho... you don't want to get it in your converter assembly. And, don't do anything to foul up the tension of the springs holding the shutters.

You'll see that the supply manual shows you FSN 9150-698-4120 gets you a ⅝-oz tube of the lube.

P-s-s-s-s-s...

AIR LINE REMINDER



When you're filling your Corporal with air, the stuff should go through the high pressure hose—from the air servicer to the missile—with no detours on the way.

If the 3500-PSI of air finds a weak spot in the hose... and it comes through... it'll really be on the move.

It'll pay to keep checking your air hoses for kinks, cuts, flat spots and signs that the wire braid in the hose is breaking through. Your support unit'll proof and leak-test the ¾-in hose every three months and smaller hoses every six months.

If you run into a bad section of hose, replace it. And replace all the hose once a year—even tho it looks good.

You don't have to change permanent hose—like the kind you have in your compressor.

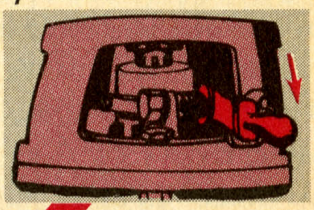
CORPORAL CHERRYPICKER PM TIPS

BEFORE HITTING THE ROAD

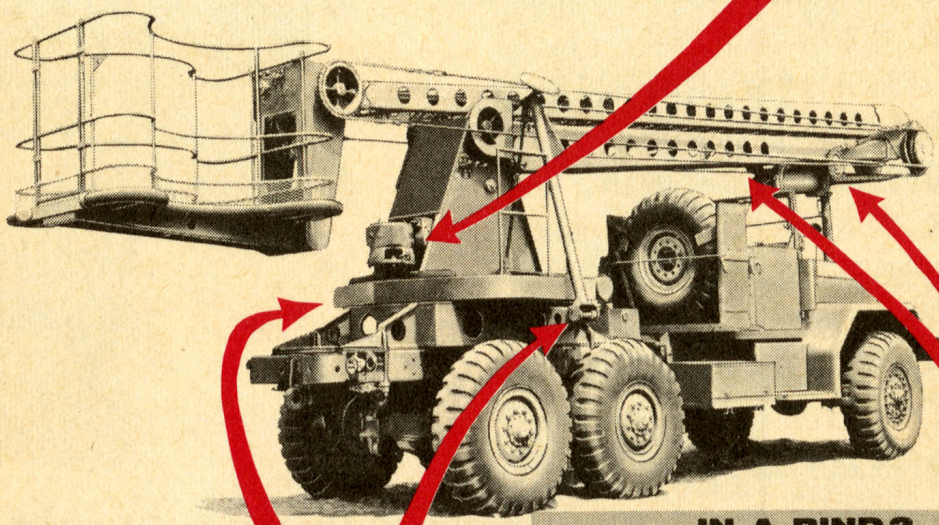
One of the real important things has to do with the reduction gear box on the M280 or M280E1 truck-mounted missile servicing platform.

That clutch shifting lever on the gear box wants to be down—in the road travel position—when you take to the highways and byways.

When it's up—in the operating position—and you're on the road . . . you run into trouble 'cause the boom moves a little. The gears in the gear box are engaged and they get to grunting and groaning as the boom moves—sometimes enough to strip 'em or bend the output shaft in the box.

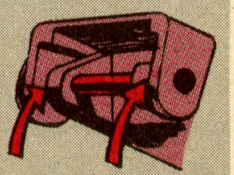


So . . . make with the lever like the arrows say—down for road travel and up for operating the boom.



UP'S AND DOWN'S

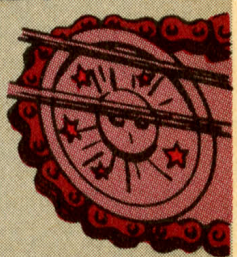
Free and easy-like—that's the way the outriggers should swing on your platform.



And, that's how they'll act if you put a few drops of OE on the clevis pin about once a week.

IN A BIND?

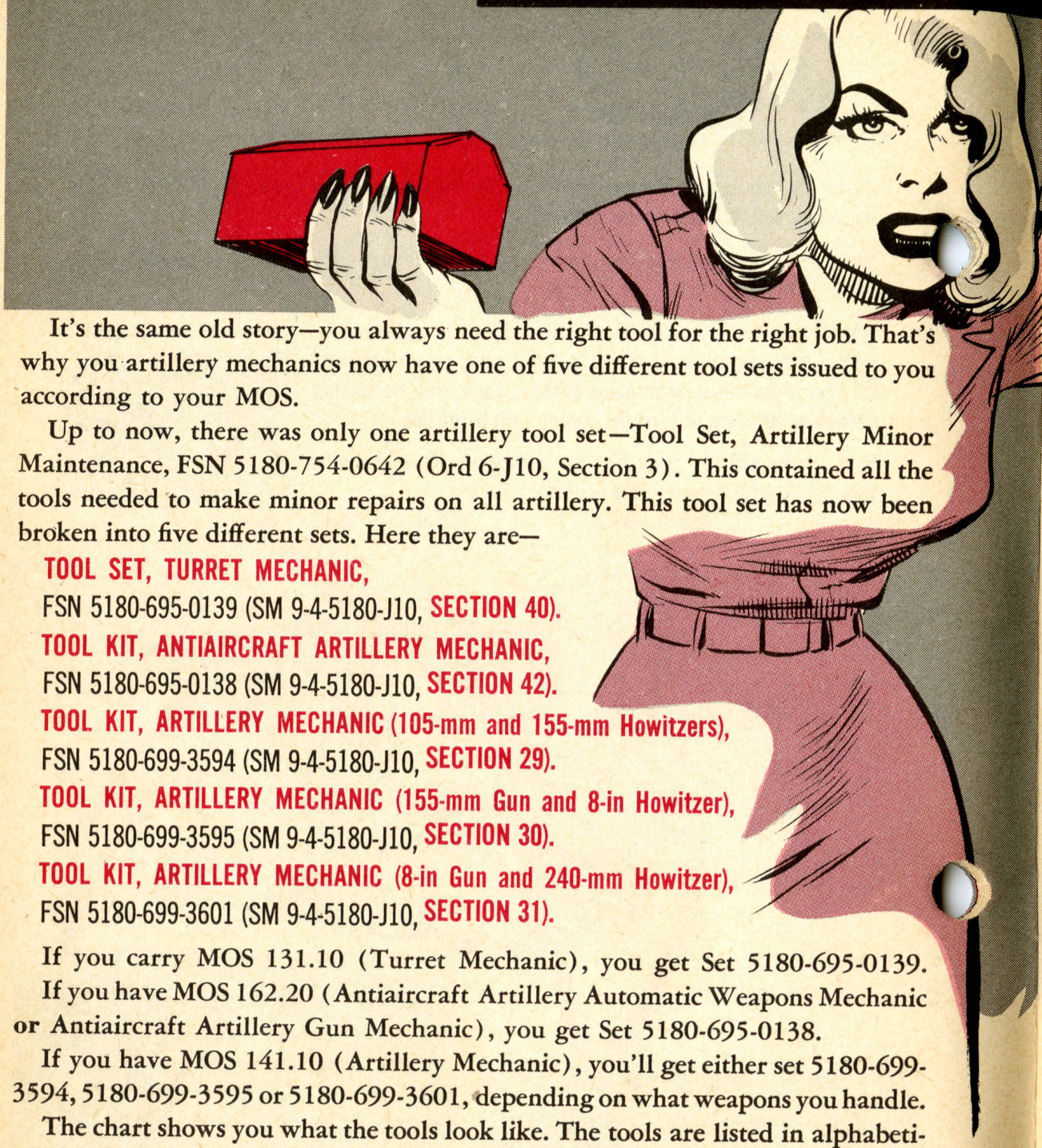
You want to keep your good ear and eye aimed in the direction of the idler sheave when you're raising the booms on your servicing platform.



That way you can tell when the sheave isn't turning right—like when it's tight and is binding. When you're in that kind of bind, call in your support unit. They'll set things right.

For artillery mechanics—
Now you can get a...

FIVE-FOR



It's the same old story—you always need the right tool for the right job. That's why you artillery mechanics now have one of five different tool sets issued to you according to your MOS.

Up to now, there was only one artillery tool set—Tool Set, Artillery Minor Maintenance, FSN 5180-754-0642 (Ord 6-J10, Section 3). This contained all the tools needed to make minor repairs on all artillery. This tool set has now been broken into five different sets. Here they are—

TOOL SET, TURRET MECHANIC,
FSN 5180-695-0139 (SM 9-4-5180-J10, **SECTION 40).**

TOOL KIT, ANTIAIRCRAFT ARTILLERY MECHANIC,
FSN 5180-695-0138 (SM 9-4-5180-J10, **SECTION 42).**

TOOL KIT, ARTILLERY MECHANIC (105-mm and 155-mm Howitzers),
FSN 5180-699-3594 (SM 9-4-5180-J10, **SECTION 29).**

TOOL KIT, ARTILLERY MECHANIC (155-mm Gun and 8-in Howitzer),
FSN 5180-699-3595 (SM 9-4-5180-J10, **SECTION 30).**

TOOL KIT, ARTILLERY MECHANIC (8-in Gun and 240-mm Howitzer),
FSN 5180-699-3601 (SM 9-4-5180-J10, **SECTION 31).**

If you carry MOS 131.10 (Turret Mechanic), you get Set 5180-695-0139.

If you have MOS 162.20 (Antiaircraft Artillery Automatic Weapons Mechanic or Antiaircraft Artillery Gun Mechanic), you get Set 5180-695-0138.

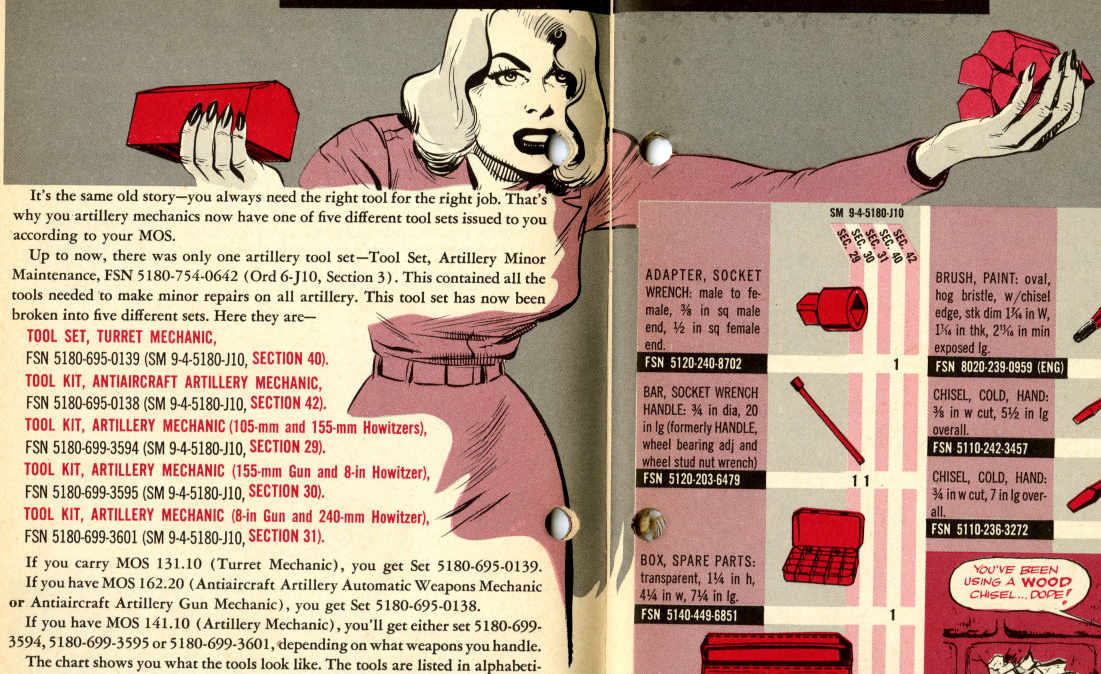
If you have MOS 141.10 (Artillery Mechanic), you'll get either set 5180-699-3594, 5180-699-3595 or 5180-699-3601, depending on what weapons you handle.

The chart shows you what the tools look like. The tools are listed in alphabetical order. You can tell what set or sets a tool belongs in by looking at the five right-hand columns. The first tool, for example, which is an adapter, is found only in Set 5180-695-0139. You can take it from there.

One more thing—some of your tools may look a little different from those shown here. That's because the same tool may be made by different manufacturers.

For artillery mechanics—
Now you can get a...

FIVE-FOR -ONE DEAL



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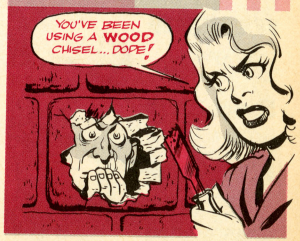
	SM 9-4-5180-J10				
	SEC. 29	SEC. 30	SEC. 31	SEC. 40	SEC. 42
ADAPTER, SOCKET WRENCH: male to female, ⅜ in sq male end, ½ in sq female end. **FSN 5120-240-8702**				1	
BAR, SOCKET WRENCH HANDLE: ¾ in dia, 20 in lg (formerly HANDLE, wheel bearing adj and wheel stud nut wrench) **FSN 5120-203-6479**			1	1	
BOX, SPARE PARTS: transparent, 1¼ in h, 4¼ in w, 7¼ in lg. **FSN 5140-449-6851**				1	
BOX, TOOL: S, loose tray, approx 7⅜ x 8½ x 21 in. **FSN 5140-357-5483**			1	1	1

	SM 9-4-5180-J10				
	SEC. 29	SEC. 30	SEC. 31	SEC. 40	SEC. 42
BRUSH, PAINT: oval, hog bristle, w/chisel edge, stk dim 1¾ in W, 1¼ in thk, 2¾ in min exposed lg. **FSN 8020-239-0959 (ENG)**				1	1
CHISEL, COLD, HAND: ⅜ in w cut, 5½ in lg overall. **FSN 5110-242-3457**				1	1
CHISEL, COLD, HAND: ¾ in w cut, 7 in lg overall. **FSN 5110-236-3272**				1	1



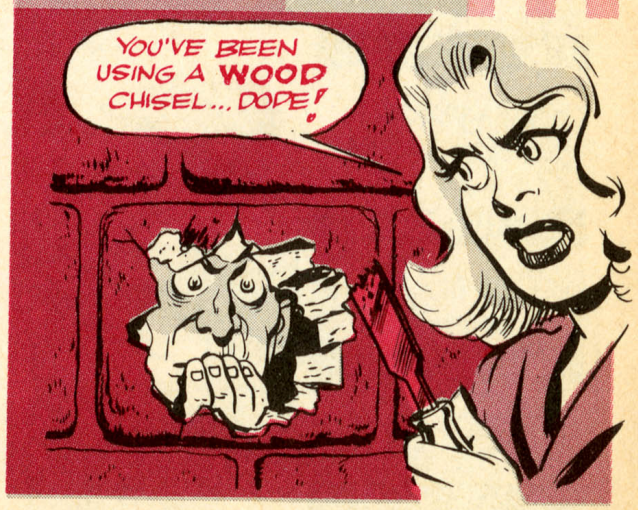
-ONE DEAL

SM 9-4-5180-J10

SEC. 29	SEC. 30	SEC. 31	SEC. 40	SEC. 42
ADAPTER, SOCKET WRENCH: male to female, ⅜ in sq male end, ½ in sq female end. FSN 5120-240-8702	1			
BAR, SOCKET WRENCH HANDLE: ¾ in dia, 20 in lg (formerly HANDLE, wheel bearing adj and wheel stud nut wrench) FSN 5120-203-6479	1	1		
BOX, SPARE PARTS: transparent, 1¼ in h, 4¼ in w, 7¼ in lg. FSN 5140-449-6851	1			
BOX, TOOL: S, loose tray, approx 7⅜ x 8½ x 21 in. FSN 5140-357-5483	1	1	1	1	1

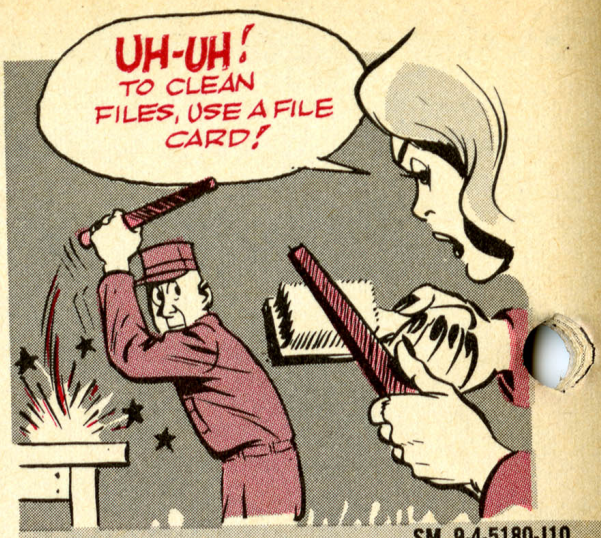
SM 9-4-5180-J10

SEC. 29	SEC. 30	SEC. 31	SEC. 40	SEC. 42
BRUSH, PAINT: oval, hog bristle, w/chisel edge, stk dim 1 7/16 in W, 1 1/16 in thk, 2 11/16 in min exposed lg. FSN 8020-239-0959 (ENG)	1	1		
CHISEL, COLD, HAND: ⅜ in w cut, 5½ in lg overall. FSN 5110-242-3457	1	1		
CHISEL, COLD, HAND: ¾ in w cut, 7 in lg overall. FSN 5110-236-3272	1	1	1		



SM 9-4-5180-J10

	SEC. 29	SEC. 30	SEC. 31	SEC. 40	SEC. 42
DRIFTPIN: sgle taper, ¼ in largest dia, 4 in lg overall. FSN 5120-239-0035		1		1	1
DRIFTPIN: sgle taper, ½ in largest dia, 4 in lg overall. FSN 5120-239-0036		1		1	1
DRIFTPIN: sgle taper, ¾ in largest dia, 6 in lg overall. FSN 5120-239-0037		1			
DRIFTPIN: sgle taper, ¾ in largest dia, 12 in lg overall. FSN 5120-241-3523		1	1	1	
EXTENSION, SOCKET WRENCH: ½ in sq-drive, 5 in lg (formerly BAR, socket wrench, extn). FSN 5120-243-7326		1		1	1
EXTENSION, SOCKET WRENCH: ½ in sq-drive, 10 in lg. FSN 5120-227-8074		1			
FILE, HAND: American patt, taper, slim, sgle-cut, 6 in heel to pt. FSN 5110-234-6528		1			
FILE, HAND: AS, fl, sm cut, 6 in pt to shoulder. FSN 5110-234-6532		1		1	1
FILE, HAND: AS, sec-cut, 8 in pt to shoulder. FSN 5110-156-0054		1	1	1	



SM 9-4-5180-J10

	SEC. 29	SEC. 30	SEC. 31	SEC. 40	SEC. 42
FILE, HAND: American patt, 3 sq, dble-cut, sm cut, 6 in heel to pt. FSN 5110-241-9160					1
FILE, HAND: American patt, half-rd, dble cut, sm cut, 6 in heel to pt. FSN 5110-241-9149					1
FILE, HAND: American patt, rd, sgle cut, sm cut, 6 in heel to pt. FSN 5110-234-6550					1
HAMMER, HAND: 3 oz nom total wt, soft br hd. FSN 5120-242-3908				1	1
HAMMER, HAND: machinist's ball-peen, 1 lb nom hd. FSN 5120-242-3917					1
HAMMER, HAND: machinist's ball-peen type, 4⅜ in lg forged S 20 oz hd, 1¼ in dia face, 15 in lg wood hdl. FSN 5120-224-4046				1	1 1 1

SM 9-4-5180-J10

	SEC. 29	SEC. 30	SEC. 31	SEC. 40	SEC. 42
HAMMER, INSERTED FACE: plastic, 1 in hd dia, 3½ in hd lg, 5 oz, w/2 ea soft, med, tough and nylon faces. FSN 5120-357-6074				1	
HAMMER, INSERTED FACE: plastic, 2 in hd dia, 5 in hd lg, 2 lb, w/2 ea soft, med, tough and nylon faces. FSN 5120-357-6076					1
HANDLE, FILE, WOOD: 4 in nom lg overall, 1 in dia overall. FSN 5110-263-0342			1	1	
HANDLE, FILE, WOOD: med size, 1¼ in dia of hand grip. FSN 5110-263-0349		1	1	1	
HANDLE, SOCKET WRENCH: brace speeder type, ½ in sq-drive, 18 in lg. FSN 5120-230-6364					1
HANDLE, SOCKET WRENCH: hinged, ½ in sq-drive, 12 15/16 in nom lg overall. FSN 5120-221-7958		1		1	1
HANDLE, SOCKET WRENCH: rvrs rtc type, ½ in size drive end, 9½ in nom lg overall. FSN 5120-230-6385		1		1	1
KNIFE, PUTTY: 1¼ in w/flex blade. FSN 5120-221-1536 (ENG)					1

SM 9-4-5180-J10

	SEC. 29	SEC. 30	SEC. 31	SEC. 40	SEC. 42
OILER, HAND: 5 oz cap, force fed by int pump, body and spout tin pl, 1⅞ in dia body, 5 in lg spout, female thd bottom end, 1½ in dia of thd, w/removable tip. FSN 4930-274-5713				1	1
PADLOCK: pin tumbler mech, br case, cd fin shackle, 1¾ in w, 1 1/16 in h, keyed individually, w/o clevis. FSN 5340-205-5517 (ENG)				1	1
PLIERS, DIAGONAL CUTTING: 6 in lg. FSN 5110-239-8253				1	
PLIERS: lineman's (w/ side cutter), 8 in lg (nom size). FSN 5120-239-8251				1	
PLIERS: (side-cutter) lg rd nose, (w/cutter), 6 in lg. FSN 5120-247-5177				1	1
PLIERS, SLIP JOINT: stght nose, comb, w/ cutter, 8 in nom size. FSN 5120-223-7397		1	1	1	1

	SEC. 29	SEC. 30	SEC. 31	SEC. 40	SEC. 42
PUNCH, CENTER, SOLID: ⅛ in nom dia at top of tapd pt, ⅜ in nom dia of stk, 4 in nom lg overall. FSN 5120-293-3509			1	1	1
PUNCH, DRIVE PIN: std, 3/32 in dia of pt, 4 in lg overall. FSN 5120-242-3435			1	1	1
PUNCH, DRIVE PIN: std, ⅛ in dia of pt, 4 in lg overall. FSN 5120-242-5966		1	1	1	1
PUNCH, DRIVE PIN: std, 3/32 in dia of pt, 4 in lg overall. FSN 5120-240-6104			1		
PUNCH, DRIVE PIN: std, ¼ in dia of pt, 4 in lg overall. FSN 5120-595-9521		1	1	1	1
PUNCH, DRIVE PIN: stght type, 3/16 in dia of pt, 1 in nom lg pt. FSN 5120-240-6106			1		

SM 9-4-5180-J10

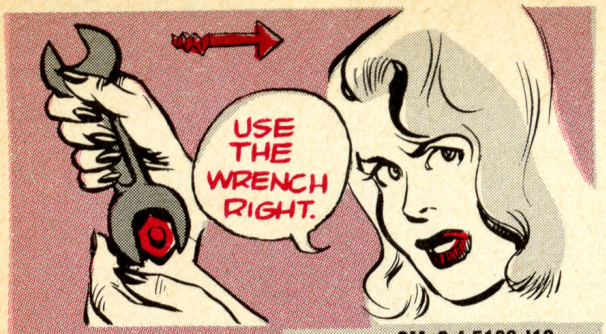
	SEC. 29	SEC. 30	SEC. 31	SEC. 40	SEC. 42
PUNCH, DRIVE PIN: stght type, ¼ in nom lg pt, 0.03 in dia of pt. FSN 5120-223-1019				1	1
PUNCH, DRIVE PIN: stght type, ⅜ in nom lg pt, 0.05 in dia of pt. FSN 5120-223-1020					1
RULE, STEEL, MACHINIST'S: 6 in lg, 11/16 in w, 0.031 in thk, smallest unit of grad for ea grad edge 1/64 in, 1/32 in, 1/16 in, ⅛ in, rh reading. FSN 5210-234-5223					1
SCREWDRIVER, FLAT TIP: plastic hdl, ¼ in w flared tip, 1¾ in lg blade. FSN 5120-293-3176				1	1
SCREWDRIVER, FLAT TIP: plastic hdl, ¼ in w flared tip, 4 in lg blade. FSN 5120-222-8852					1
SCREWDRIVER, FLAT TIP: plastic hdl, ⅜ in w flared tip, 8 in lg blade. FSN 5120-237-6985				1	1
SCREWDRIVER, FLAT TIP: w/wrench grip, mtl w/wood inserts hdl, flared tip, ½ in nom w flared tip, 5 in nom lg blade. FSN 5120-227-7338				1	1

SM 9-4-5180-J10

	SEC. 29	SEC. 30	SEC. 31	SEC. 40	SEC. 42
SCREWDRIVER, FLAT TIP: wood hdl, ⅛ in w stght sided tip, 2 in lg blade. FSN 5120-293-3180		1	1		
SCREWDRIVER, FLAT wood hdl, ¼ in w ed tip, 4 in lg blade. FSN 5120-277-9491		1	1		
SCREWDRIVER, OFF-SET: opposite offset, opposite ends, ea off-set tipped, fl tip, paral-lel to longitudinal axis of body, fl tip 90 deg angle to longitudinal axis of body or fl tip 45 deg angle to longitudi-nal axis of body, ⅜ in w, 6 in lg overall. FSN 5120-240-5232					1

SM 9-4-5180-J10

	SEC. 29	SEC. 30	SEC. 31	SEC. 40	SEC. 42
SOCKET, SOCKET WRENCH: ½ in sq-drive, 12 pt, 7/16 in opng FSN 5120-189-7924		1		1	1
½ in opng FSN 5120-237-0984		1		1	1
9/16 in opng FSN 5120-189-7932		1		1	1
5/8 in opng FSN 5120-189-7946		1		1	1
¾ in opng FSN 5120-189-7985		1		1	1
13/16 in opng FSN 5120-189-7933		1		1	
⅞ in opng FSN 5120-189-7934		1		1	1
15/16 in opng FSN 5120-189-7935		1		1	
1 in opng FSN 5120-189-7927		1		1	
1⅛ in opng FSN 5120-189-7914					1
1¼ in opng FSN 5120-189-7917		1		1	1
STONE, SHARPENING: unmounted, artificial, half-rd, fine. No. 3, ⅜ x 4 in lg. FSN 5345-224-6595				1	1
STONE, SHARPENING: unmounted, syn, sq, silicon carbide or al-oxide, fine grit, ⅜ x ⅜ x 4 in lg. FSN 5345-243-6082				1	
UNIVERSAL JOINT, SOCKET WRENCH: ½ in sq-drive. FSN 5120-269-7971		1			1



SM 9-4-5180-J10

SEC. 29 | SEC. 30 | SEC. 31 | SEC. 40 | SEC. 42

WRENCH, AUTO, ADJUSTABLE: 3⅝ in jaw opng, 15 in lg.
FSN 5120-264-3793 — 1

WRENCH, BOX AND OPEN END, COMBINATION: ⅜ in hex or 12 pt opng, 15 deg angle of open end, 4³⁄₁₆ in nom lg overall.
FSN 5120-228-9504 — 1

WRENCH, BOX AND OPEN END, COMBINATION: ⁷⁄₁₆ in hex or 12 pt opng, 15 deg angle of open end, 5 in nom lg overall.
FSN 5120-228-9505 — 1

WRENCH, BOX AND OPEN END, COMBINATION: offset type, ½ in opng, 12 pt, 15 deg angle of open end wrench opng, 5¼ in nom lg overall.
FSN 5120-228-9506 — 1

WRENCH, BOX AND OPEN END, COMBINATION: offset type, ⁹⁄₁₆ in opng, 12 pt, 15 deg angle & offset, 7 in lg.
FSN 5120-184-8642 — 1

SM 9-4-5180-J10

SEC. 29 | SEC. 30 | SEC. 31 | SEC. 40 | SEC. 42

WRENCH, BOX AND OPEN END, COMBINATION: offset type, ⅝ in opng, 12 pt, 15 deg angle & offset, 7¼ in lg.
FSN 5120-184-8643

WRENCH, BOX AND OPEN END, COMBINATION: offset type, ¾ in opng, 12 pt, 15 deg angle of open end wrench opng, 8 in nom lg overall.
FSN 5120-228-9510 — 1

WRENCH, BOX AND OPEN END, COMBINATION: offset type, ⅞ in opng, 12 pt, 15 deg angle of open end wrench opng, 10¼ in nom lg overall.
FSN 5120-228-9512 — 1

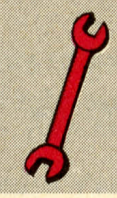
WRENCH, OPEN END, ADJUSTABLE: sgle-hd, 0 to 1.135 in min jaw opng cap, 10 in nom lg overall.
FSN 5120-449-8083 — 1

WRENCH, OPEN END, ADJUSTABLE: sgle-hd, ¹⁵⁄₁₆ in jaw opng, 8 in lg.
FSN 5120-240-5328 — 1 1

WRENCH, OPEN END, ADJUSTABLE: sgle-hd, 0 to 1⁵⁄₁₆ in jaw opng, 12 in lg.
FSN 5120-264-3796 — 1 1 1 1

SEC. 29 | SEC. 30 | SEC. 31 | SEC. 40 | SEC. 42

WRENCH, OPEN END, FIXED: dble-hd type, 7/16 & 9/16 in opng, 15 deg angle, 5/16 in thk, 5 in lg overall.
FSN 5120-277-1218 — 1

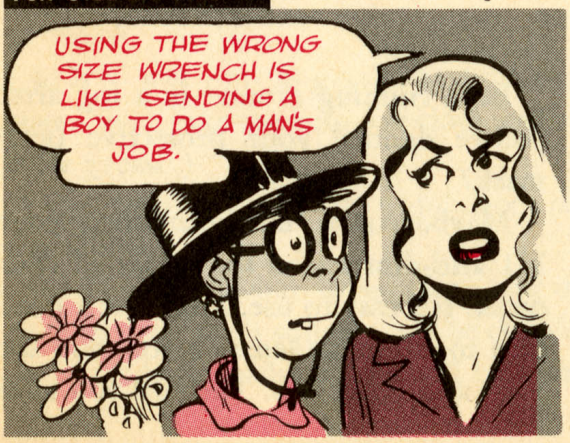


WRENCH, OPEN END, FIXED: dble-hd type, 5/8 & 11/16 in opng, 15 deg angle, spear-hd, alloy-S, 21/64 in thk, 7 in nom overall lg.
FSN 5120-277-8301 — 1

WRENCH, OPEN END, FIXED: dble-hd type, 1 1/16 & 1 1/4 in opng, 15 deg angle, 1/2 in thk, 12 in lg.
FSN 5120-187-7134 — 1

WRENCH, OPEN END, FIXED: dble-hd type, 1 7/16 & 1 13/16 in opng, 15 deg angle, reg hd, carb-S.
FSN 5120-449-8142 — 1

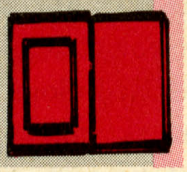
WRENCH, PIPE: adj, 1/2 to 1 1/2 in pipe cap, 14 in lg.
FSN 5120-277-1486 — 1



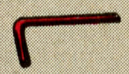
SM 9-4-5180-J10

SEC. 29 | SEC. 30 | SEC. 31 | SEC. 40 | SEC. 42

WRENCH SET, SOCKET HEAD SCREW: L-type handles, hex type, 0.050 in to 5/16 in, w across flats, w/ro, 13 wrenches in set.
FSN 5120-204-0972 — 1

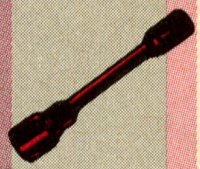


WRENCH, SOCKET HEAD SCREW: hex type, 1/8 in across flats, L-type hdl, 2 1/4 in nom arm lg.
FSN 5120-240-5292 — 1

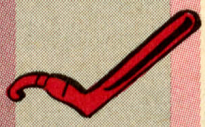


WRENCH, SOCKET: sgle-hd, offset, sq, 7/16 in opng, 6 1/2 in lg.
FSN 5120-293-2452 — 1

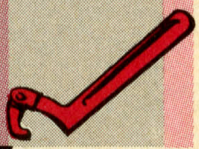
WRENCH, SOCKET: wheel stud nut, T-type dble socket, 1 1/16 & 1 1/2 in hex opng, 11 13/16 in nom lg overall.
FSN 5120-357-8850 — 1



WRENCH, SPANNER: adj, hook, 3/4 to 2 in circle dia, 11/32 in thk of hook.
FSN 5120-288-6468 — 1



WRENCH, SPANNER: adj hook type, 15/32 in thk of hook, 4 3/4 in dia range of circle.
FSN 5120-277-9076 — 1



WRENCH, TORQUE: rigid frame L-hdl style, dial indicating tor mech, w/visual indicating mech, 3/8 in male sq-drive, 150 in-lb cap.
FSN 5120-230-6380 — 1

BE YOUR OWN

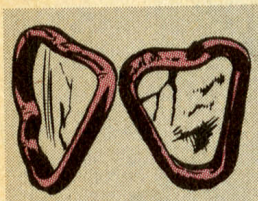
You have an M9 or M9A1 field protective mask issued to you so you'll have protection for your face, eyes, and respiratory tract in case of a CBR (Chemical, Biological, Radiological) attack.

Your mask won't be worth a tinker's dam if you don't keep it in top-notch working condition at all times.

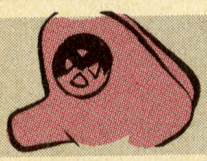
To do this you ought to give your mask an inspection from time to time. In case there's some doubt in your mind as to what defects to look for—here's a rundown.

FACEBLANK—Permanent set which affects fit; sticky, hard or brittle (due to rubber being old); cracks caused by dry rot; holes, tears, and splits; deflector tubes blocked; surfaces dirty, greasy.

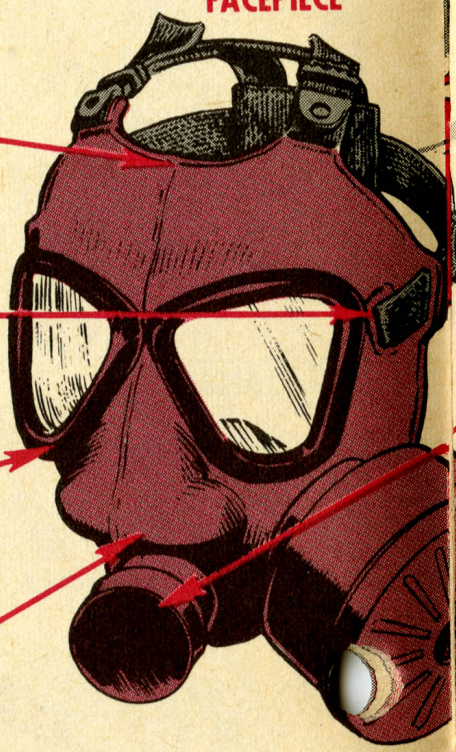
TAB ASSEMBLY — Fasteners loose; metal parts rusted; rivets damaged; fabric mildewed or discolored.



EYEPIECES—Eyerings corroded or damaged; lenses cracked, chipped, scratched, broken, or separated, distorted or discolored enough to impair vision.



NOSECUP—Not attached to faceblank right; valve disks missing or damaged.



FOG

Been running around in a fog after you've donned your protective (gas) mask?

Maybe you've not been using your M1 anti-dim set on the lenses of your mask. It's easy to use. Might be a good idea to clean the lenses before you use your anti-dim cloth. Then all you have

BE YOUR OWN INSPECTOR

PROTECTIVE ON THE GAS MASK

You have an M9 or M9A1 field protective mask issued to you so you'll have protection for your face, eyes, and respiratory tract in case of a CBR (Chemical, Biological, Radiological) attack.

Your mask won't be worth a tinker's dam if you don't keep it in top-notch working condition at all times.

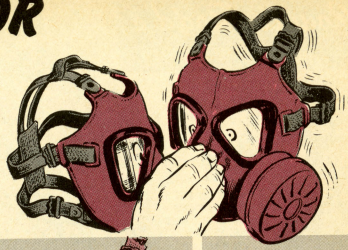
To do this you ought to give your mask an inspection from time to time. In case there's some doubt in your mind as to what defects to look for—here's a rundown.

FACEBLANK—Permanent set which affects fit; sticky, hard or brittle (due to rubber being old); cracks caused by dry rot; holes, tears, and splits; deflector tubes blocked; surfaces dirty, greasy.

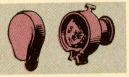
TAB ASSEMBLY — Fasteners loose; metal parts rusted; rivets damaged; fabric mildewed or discolored.

EYEPIECES—Eyerings corroded or damaged; lenses cracked, chipped, scratched, broken, or separated, distorted or discolored enough to impair vision.

NOSECUP—Not attached to faceblank right; valve disks missing or damaged.



HEAD HARNESS — Straps broken; elastic webbing won't stretch; webbing mildewed or frayed.



OUTLET VALVE—Has dirt, dust, sand in it; valve disk not seated right.

CANISTER MOUNTING — Has dirt, dust, sand, etc., in it; valve disk not seated right.

CANISTER—Holes in it; large dents in canister body; rusted and corroded; dirty, dusty, sandy.

CARRIER—Mildewed, stained, and torn; straps and pockets torn; hardware missing or damaged.

FOG LIFTERS

Been running around in a fog after you've donned your protective (gas) mask?

Maybe you've not been using your M1 anti-dim set on the lenses of your mask. It's easy to use. Might be a good idea to clean the lenses before you use your anti-dim cloth. Then all you have to do is to wet your fingertips and moisten the inside of your lenses. Next, take the anti-dim cloth and rub. (Don't spare the elbow grease.)

Once the cloth doesn't do its job, get a new one—no washing your old one.

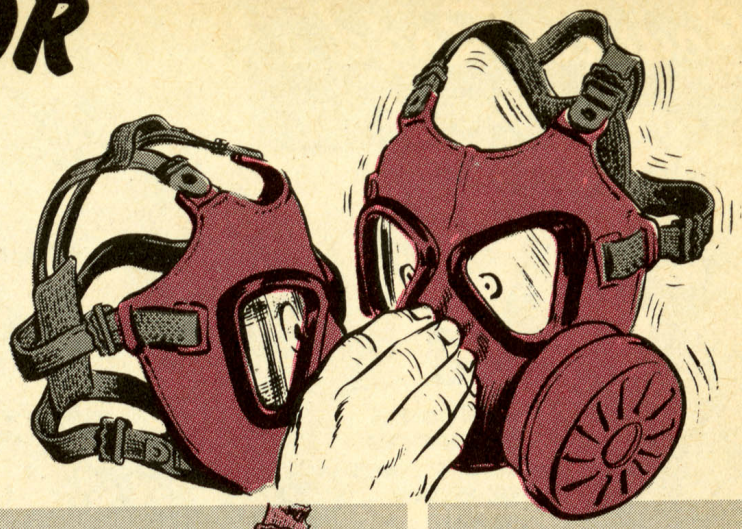
When you get your lenses clean and dry, spread the cloth out to dry but don't squeeze it. The cloth's gotta be dry before you put it back in the can or it'll rust out the bottom.

EACH COPY OF PS IS MEANT FOR 10 READERS

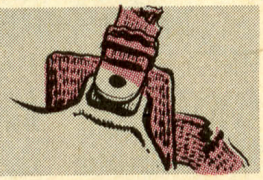
PASS IT ALONG!

INSPECTOR

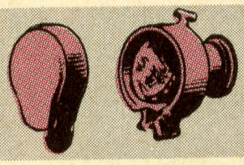
PROTECTIVE ON THE ~~GAS~~ MASK



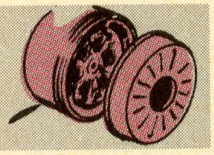
HEAD HARNESS — Straps broken; elastic webbing won't stretch; webbing mildewed or frayed.



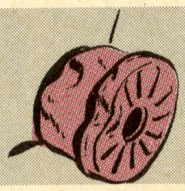
OUTLET VALVE—Has dirt, dust, sand in it; valve disk not seated right.



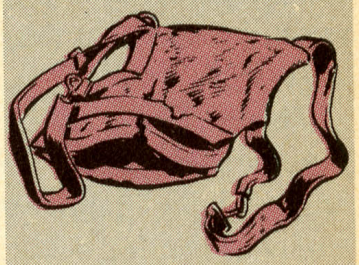
CANISTER MOUNTING — Has dirt, dust, sand, etc., in it; valve disk not seated right.



CANISTER—Holes in it; large dents in canister body; rusted and corroded; dirty, dusty, sandy.



CARRIER—Mildewed, stained, and torn; straps and pockets torn; hardware missing or damaged.



LIFTERS

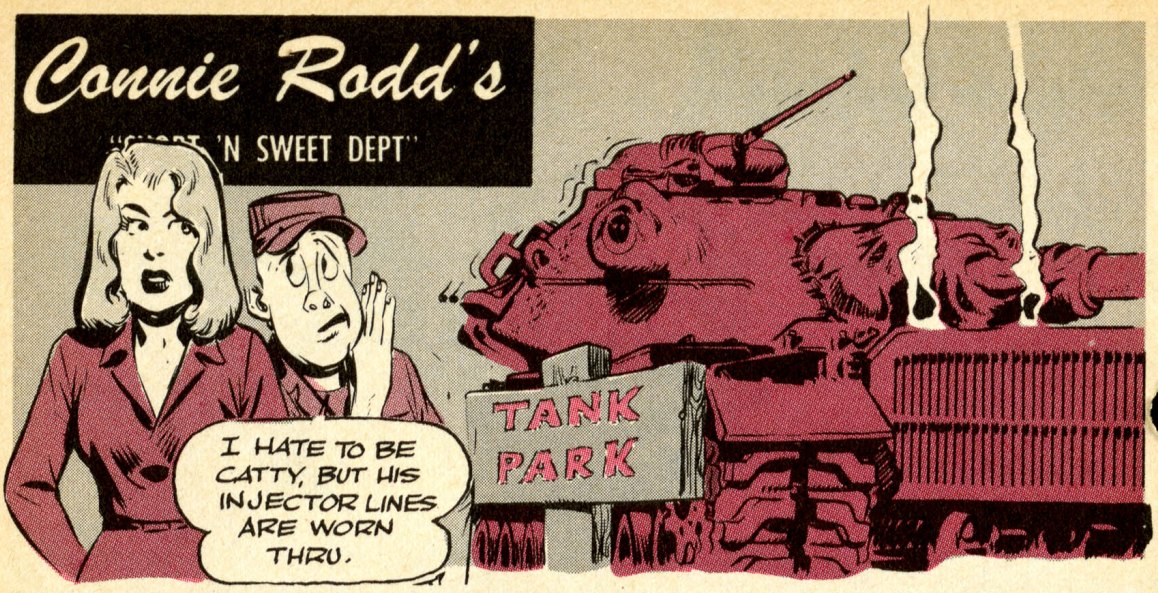
to do is to wet your fingertips and moisten the inside of your lenses. Next, take the anti-dim cloth and rub. (Don't spare the elbow grease.)

Once the cloth doesn't do its job, get a new one—no washing your old one.

When you get your lenses clean and dry, spread the cloth out to dry but don't squeeze it. The cloth's gotta be dry before you put it back in the can or it'll rust out the bottom.

EACH COPY OF P★S IS MEANT FOR 10 READERS

PASS IT ALONG!



Tubes in a hotseat?

I'd sure keep a sharp sniffer in the engine compartment of my M48A2 tanks if I were you. Seems those fuel injector tubes on the AVI 1790-8 engines wear through real easy, and gas can start dripping.

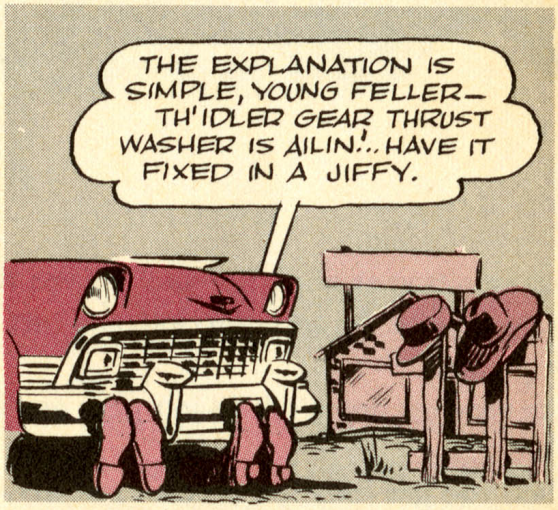
Those tubes, which go from the fuel injector pump to the injectors, can vibrate and rub against other parts of the engine if they're not seated right and tight. Sooner or later a tube wears through, and you've got yourself one nasty fire hazard.

The only way you can really inspect those tubes is by pulling the engine—they lie real low on the engine and pass under such things as the manifolds. The only tip-off without pulling the engine is a strong gas smell from the compartment. If you have any inkling of this, deadline the tank and pull the engine—but quick. Look for worn spots and replace the tubes if you find any. If it's a false alarm, make sure those tubes are lying in their support clamps the right way and are tight.

One last tip—those fuel injector tubes have been known to start rubbing through with just 50 miles on a tank. So, keep a sharp eye—and a keen sniffer.

Check out the thruster

If you're hearing a wailing and a moaning and a grinding from the transmission of your 1956 or 1957 Chevy vehicle, could be the idler-gear thrust-washer has broken apart, and the bits are getting between the gears. Take



heart, though, because you can still do something about the trouble, although it may be past the warranty period.

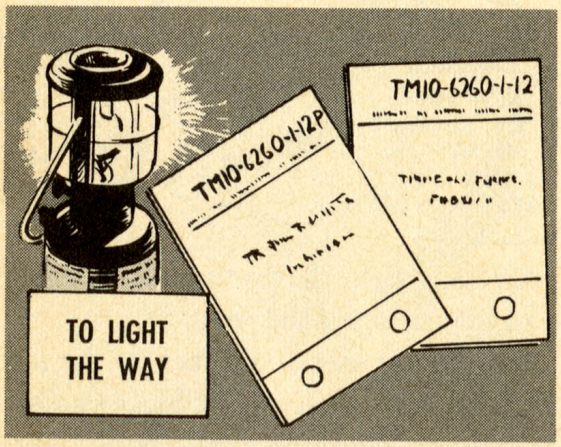
HERE'RE THE VEHICLES ON WHICH THIS TROUBLE MAY HAPPEN—			
Model	Type Vehicle	Year	SNL
1503	Sedan	1956-57	G760
2100	Station Wagon	1956-57	G760
3100	Carryall & 1/2-ton Pickup	1956-57	G764

If you'll have your support unit take the vehicle to the nearest Chevy dealer, he'll fix the transmission. The usual 4,000-mile or one-year warranty agreement has been extended for this purpose.

The word has gone out to the manufacturer's central offices. So, if the dealer hasn't heard of the extension, have him contact the central office nearest his place of business.

The light touch

What happens when the lights go out and you're left in the dark?



Could be a good deal—with the right time, place and company. But not if you're bivouacked somewhere out there with nothin' but lanterns to show the way.

A new TM—published in two parts—has come down the line for the Lantern, gasoline, leaded fuel, FSN 6260-170-0430.

Part One is TM 10-6260-1-12P which lists repair parts and special tools that go with the lantern as well as those you need for support. The other part, TM 10-6260-1-12, passes the word on operating and maintaining the lantern.

Both are mighty helpful.

Unsound reasoning

Ran across a real lulu a while back.

Seems this driver found the air-pressure warning buzzer on his truck was making him nervous, so he unhooked it.

That's like trying to cure a gas leak by spraying the smell with deodorant. Or disarming a rattlesnake by cutting off its rattles. Attacking the problem from the wrong end, you might say.

Anyway, this joker found things real quiet and peaceful for a while—until his air pressure went out on him without warning. He made three passes at his

brake pedal and fanned out. Now about the only thing he can hear is the scream of the eagle each payday when he coughs up for the truck.

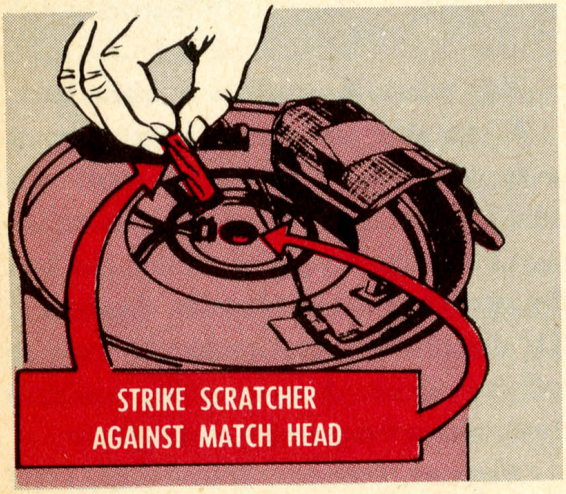
He was still lucky, though. He could be hearing harps.

That buzzer's a real healthy gadget. It lets you know when the pressure in your air tanks is dangerously low—when there's not enough air for your brakes to operate at their peak. It's a foolish man who would short-circuit his own safety—and everyone else's—by tampering with it.

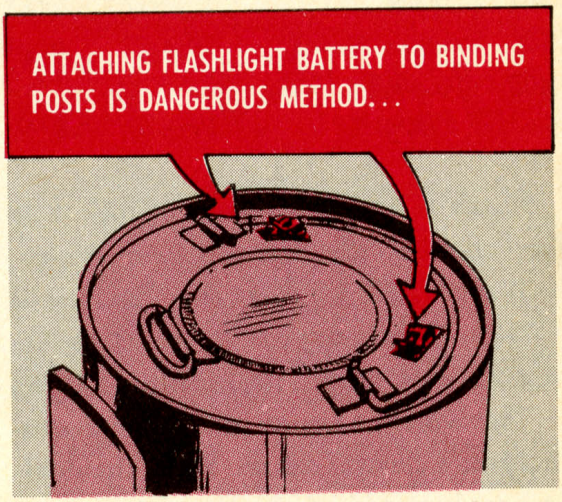
Flash in the pan

Seems like there're two ways to set off your M5 ground-type HC 30-lb smoke pot. You can do it by hand or by electricity.

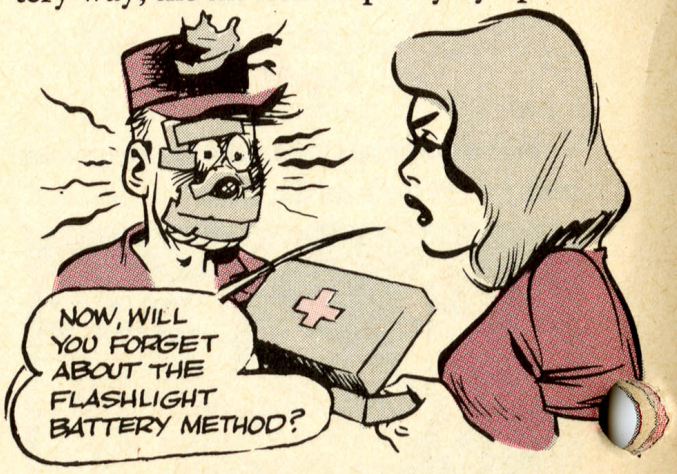
When you do it by hand you've got no problem. All you do is pull back the tear strip, strike the scratcher block against the match head and poof! Smoke!



But, when you're using the electricity method, watch it. Your TM says you can do it either by using an exploder box igniting your pot by remote control from a distance, or by getting up close to the pot and attaching a flashlight bat-



tery to the pot's binding post. Here's the rub...if you light your pot this battery way, the tin tear strip may fly up in



your face when the pot ignites, making you the cut-up of the year.

So, play it safe and either do the job by hand with the scratcher block or electrically by using the exploder box connected to remote control...and make sure you're at least 30 yards away when you use the electrical method. This method may also send the tear strip flying.

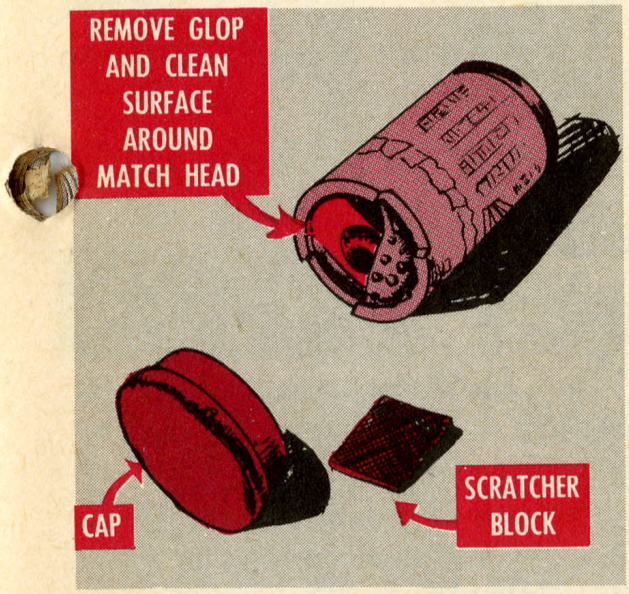
Forget about the close-up battery method.

A false start(er)

Looks can be deceiving, but don't be fooled next time you open up your M1 fire starter and see the match head all gooey with glop that's oozed out around the top. You're in for a surprise, 'cause that fire starter might be good and will be mighty handy when you need a light or heat.

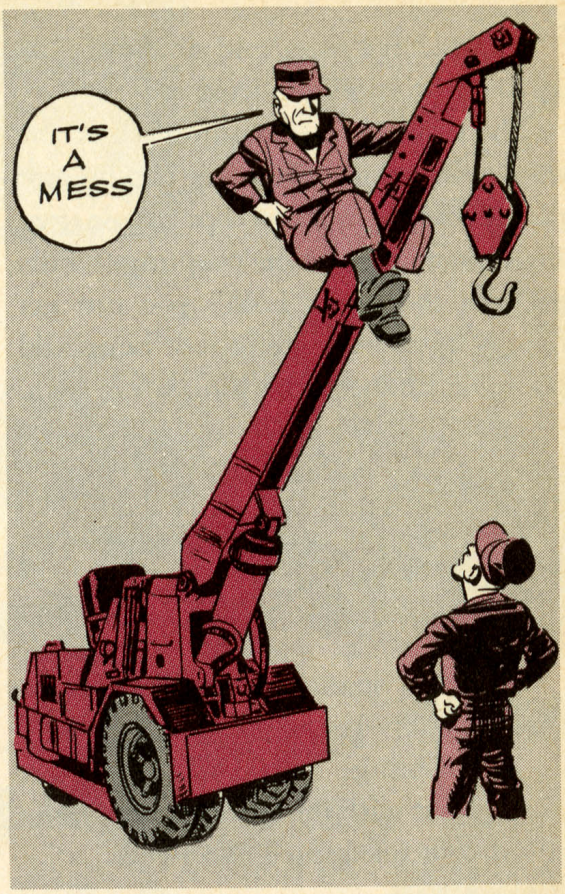
Lots of things, like hot weather or keeping 'em in storage for a long time, could cause your starter to look like jelly. But don't turn it back in or throw it away 'til you've tried it out.

You'll sometimes find gooey stuff just sitting atop the match head after you've pulled the tear tape and removed the cap. All you have to do to get your starter working is remove enough of the glop so's you have a fairly clean surface around the match head. You can even remove a lot of it by using the little scratcher block.



When you're ready to light up, just strike the match head against the scratcher block and presto! Fire!

Going up?



When any of your equipment goes up for higher echelon work, make sure it's got all its papers.

Make sure, too, that all the first and second echelon maintenance has been pulled. This way you won't have it to do if the equipment bounces.

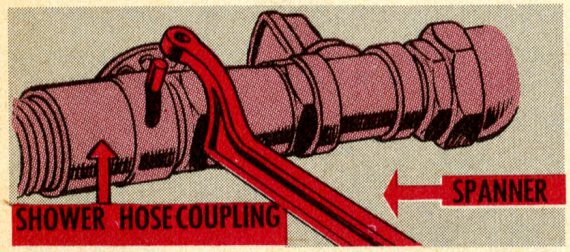
DA Form 478 (Organizational Equipment File) should be on top of the form pile. Be sure, also, that every organizational MWO has been applied and recorded.

One other little thing. But a mighty important one. **Clean** the vehicle. Many a buggy has bounced back 'cause it was dirty and greasy. Nobody likes working on a messy piece of equipment—especially if it's not his own.

Star spangled spanner

Stories have been told about the M-1950 bath units that dried up.

The reason: The coupling where the shower hose joins the water blender got plenty tough to hook up. Those two little metal nubs on the coupling (which provide the only "hold" you can get on it) have been snapped, bent and pounded till there's nothing left to grab.

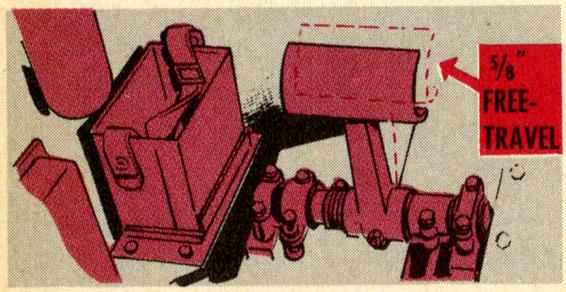


There's a spanner designed just for that coupler—found in QM 7-8, SPV 23 and Change 1 to TM 10-1405. A quick twist with the spanner and you're coupled or uncoupled. No sweat.

Here's a brake

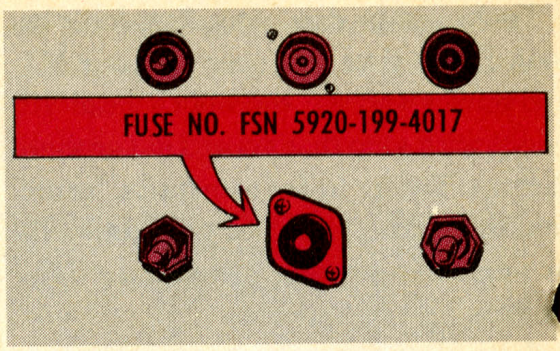
Next time you go to adjust the brakes on your M44 155-mm self-propelled howitzer, here're a couple of numbers you'll need to know:

The brake pedal free-travel is 5/8 inch.



The clearance between the piston push-rod and the piston in the master cylinder is 1/8 inch. Makes for good brakes—it does.

Name and number



Comes the time when you have to replace the 6½-amp FNM-type fuse in your Nike-Ajax M22 missile electrical system test set. The fuse was put in the test set by MWO Ord Y19-W9 (6 Jan 58), minus its stock number.

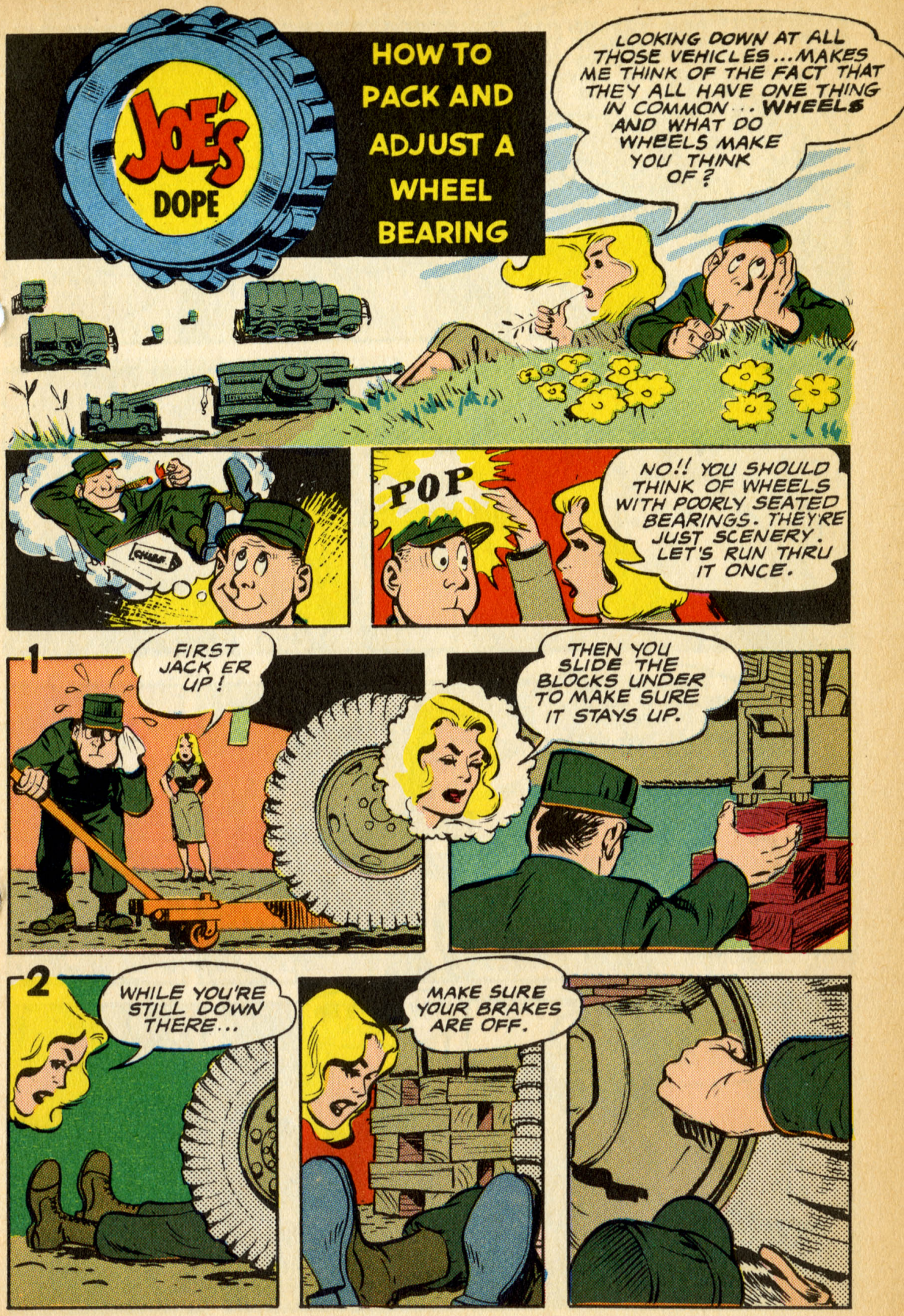
Sig 5, FSC Group 59, Class 5920 (14 Oct 54) is the supply manual that gives the fuse this Signal Stock No.: 3Z2606. 23. FSN 5920-199-4017 gets you the same fuse.

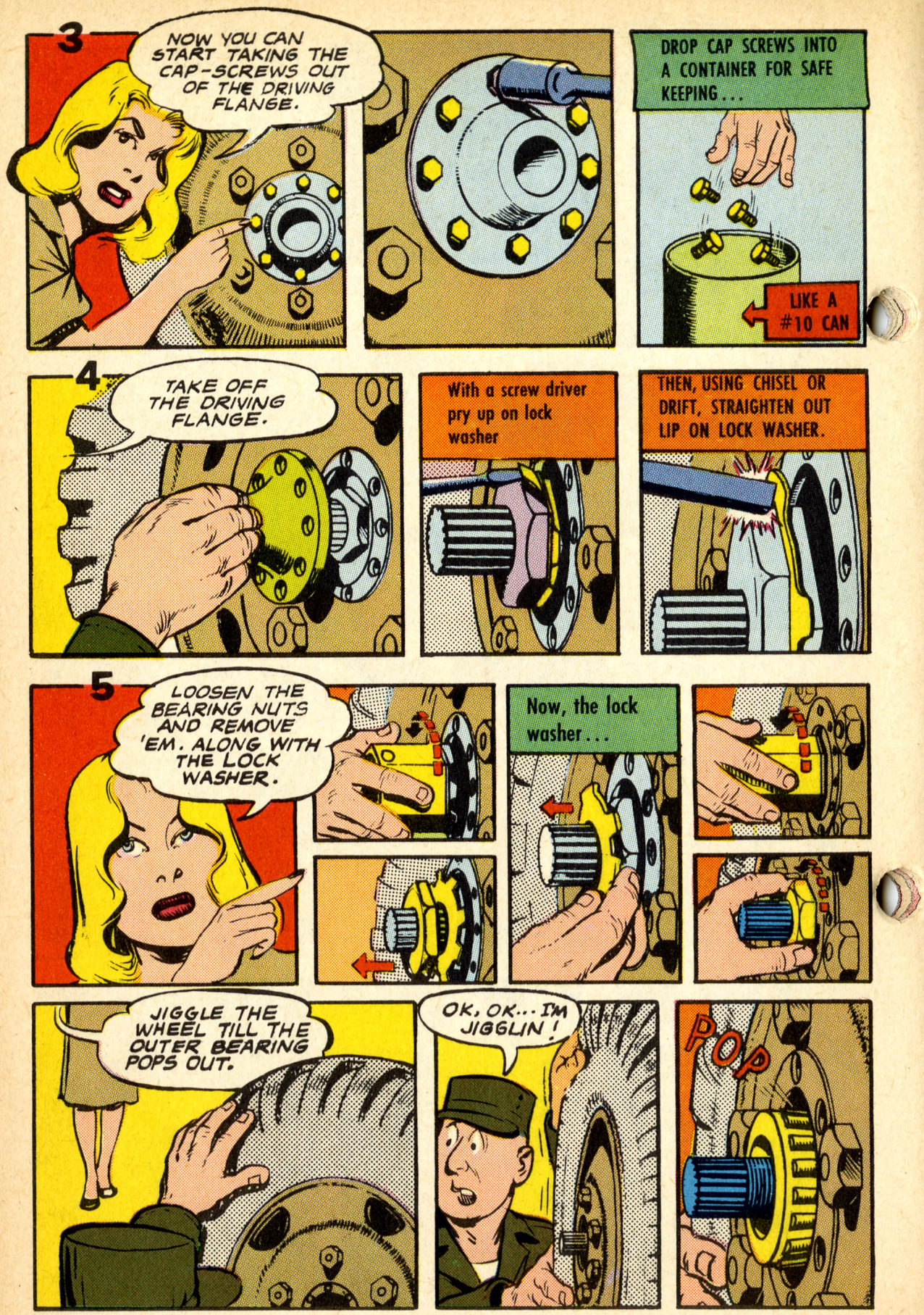
Nix on nails

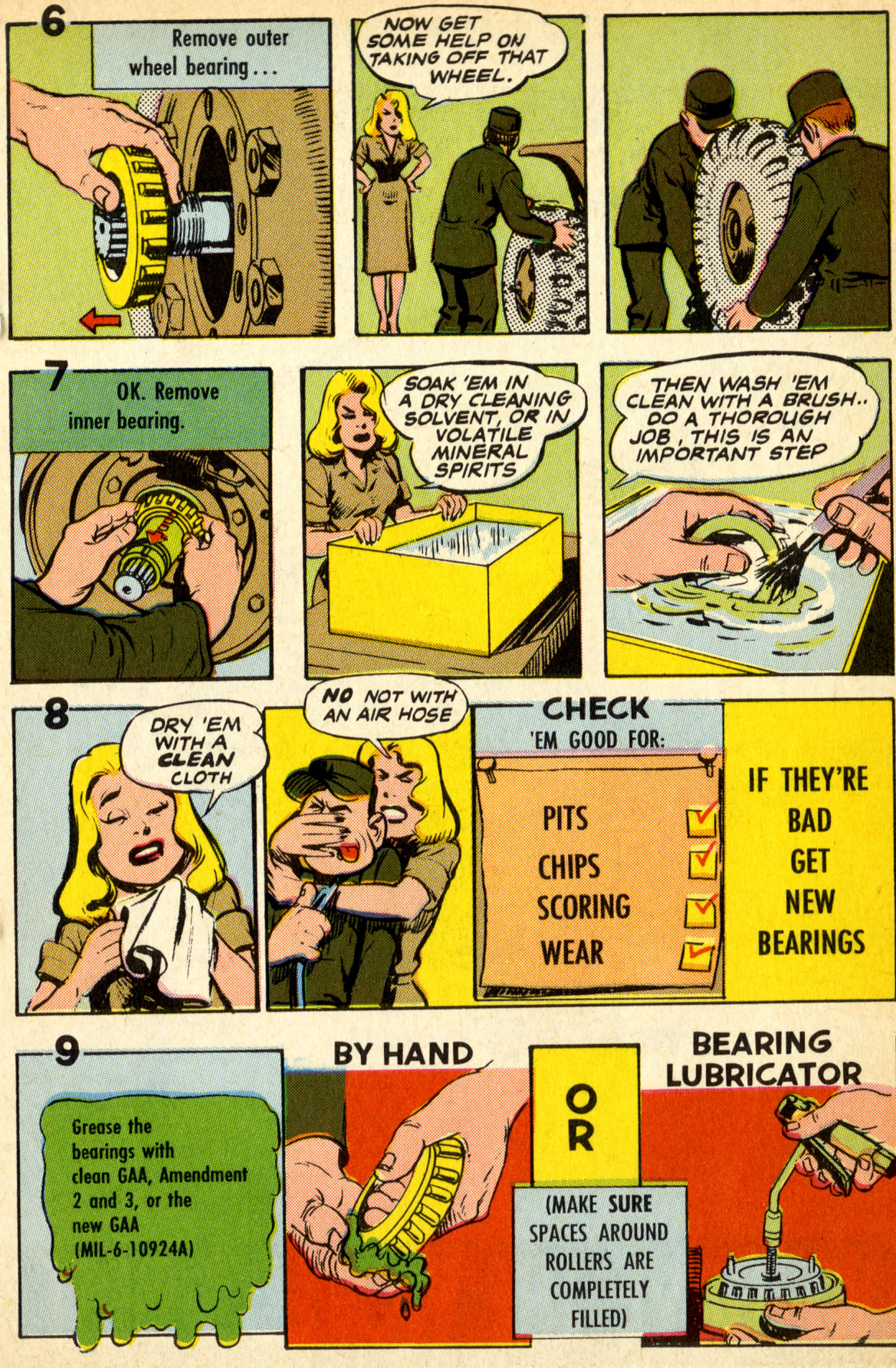
Hey, now... don't go pounding nails through dunnage into ammo cases to keep the ammo stacked tight.

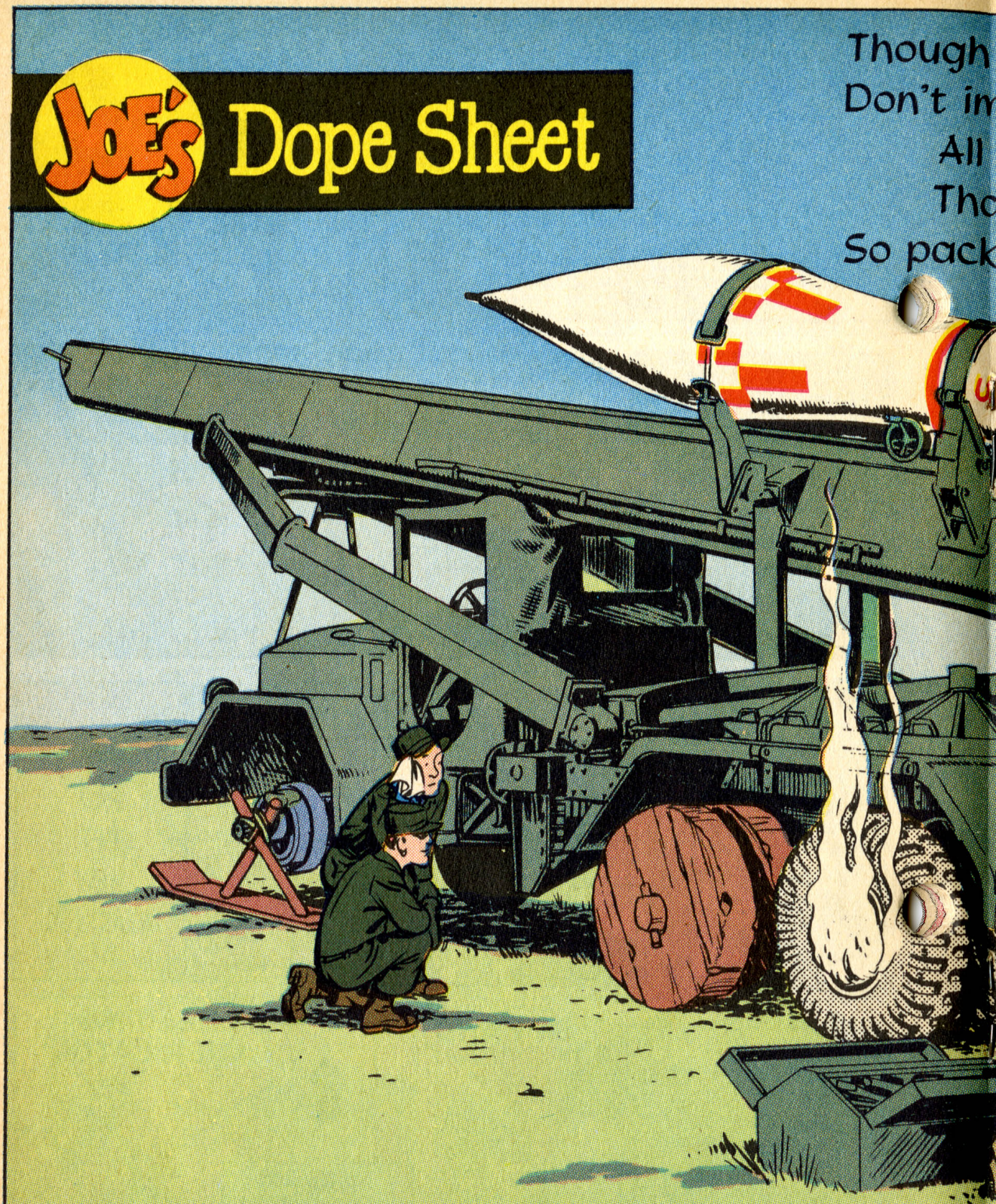
When a container is busted open that way, moisture gets in... the ammo doesn't hold up as long, and it won't act like it should when it's fired.

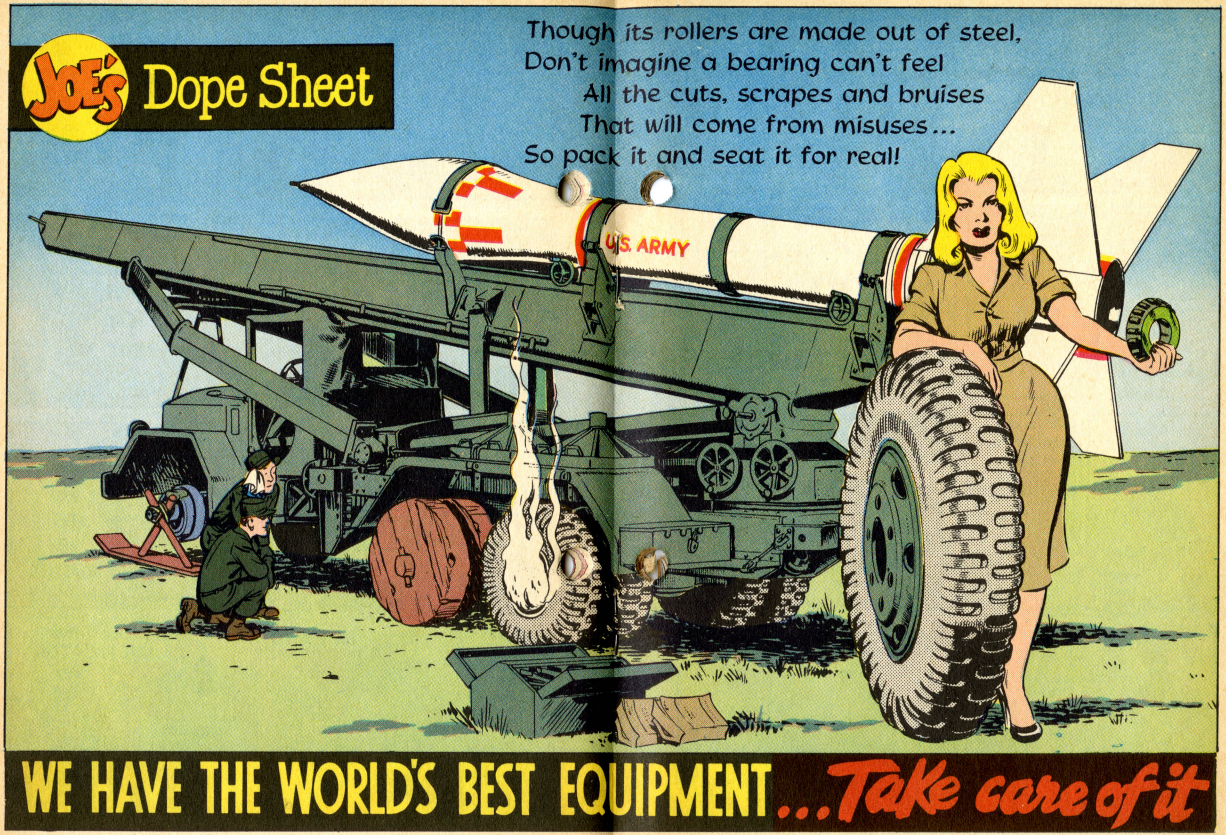
Besides... a nail could trigger off a round, followed by a stack or truck load.

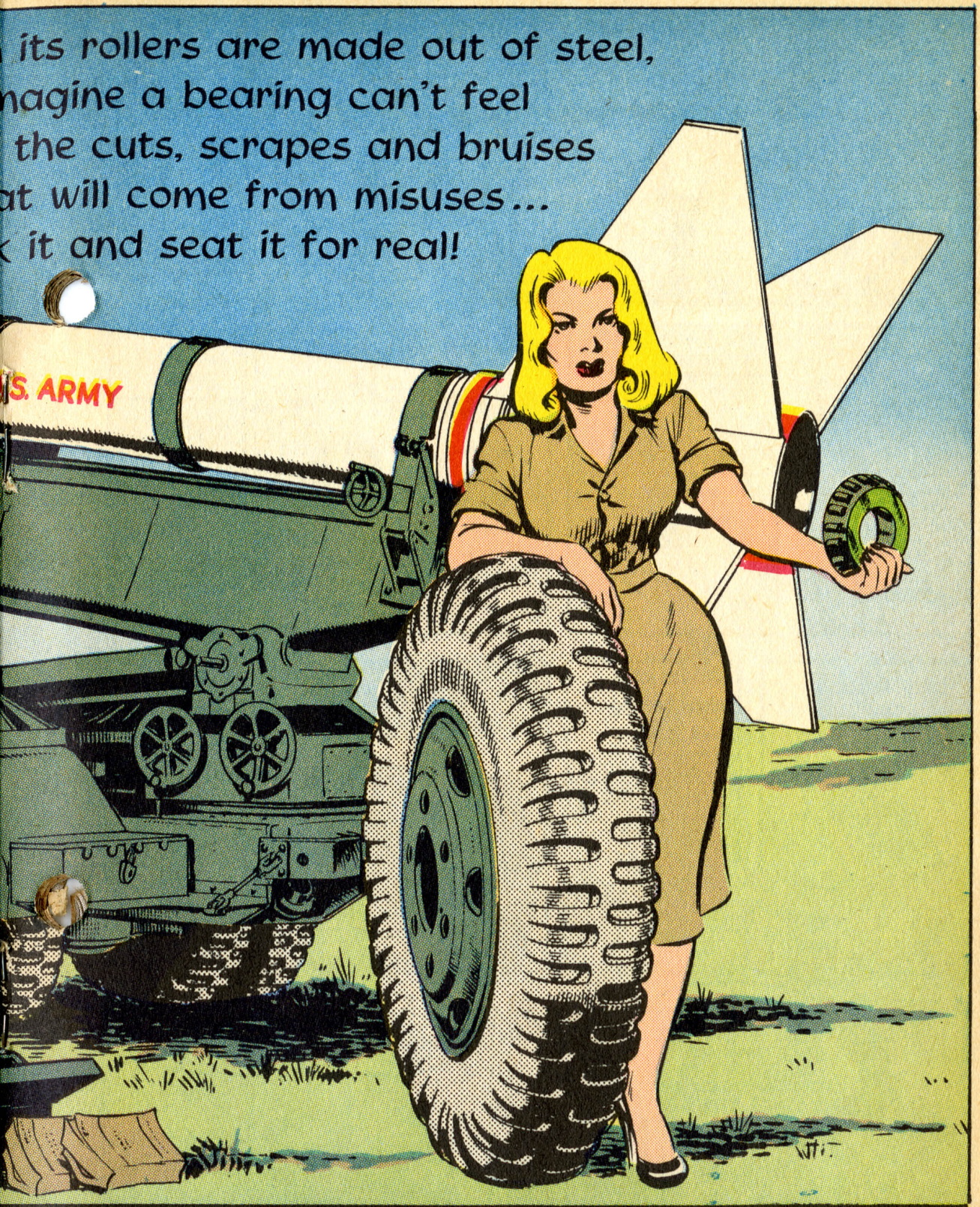

JOE'S DOPE
HOW TO PACK AND ADJUST A WHEEL BEARING
LOOKING DOWN AT ALL THOSE VEHICLES...MAKES ME THINK OF THE FACT THAT THEY ALL HAVE ONE THING IN COMMON... WHEELS AND WHAT DO WHEELS MAKE YOU THINK OF?
CHUFF
POP
NO!! YOU SHOULD THINK OF WHEELS WITH POORLY SEATED BEARINGS. THEY'RE JUST SCENERY. LET'S RUN THRU IT ONCE.
1
FIRST JACK ER UP!
THEN YOU SLIDE THE BLOCKS UNDER TO MAKE SURE IT STAYS UP.
2
WHILE YOU'RE STILL DOWN THERE...
MAKE SURE YOUR BRAKES ARE OFF.


3
NOW YOU CAN START TAKING THE CAP-SCREWS OUT OF THE DRIVING FLANGE.
DROP CAP SCREWS INTO A CONTAINER FOR SAFE KEEPING...
LIKE A #10 CAN
4
TAKE OFF THE DRIVING FLANGE.
With a screw driver pry up on lock washer
THEN, USING CHISEL OR DRIFT, STRAIGHTEN OUT LIP ON LOCK WASHER.
5
LOOSEN THE BEARING NUTS AND REMOVE 'EM. ALONG WITH THE LOCK WASHER.
Now, the lock washer...
JIGGLE THE WHEEL TILL THE OUTER BEARING POPS OUT.
OK, OK... I'M JIGGLIN!
POP

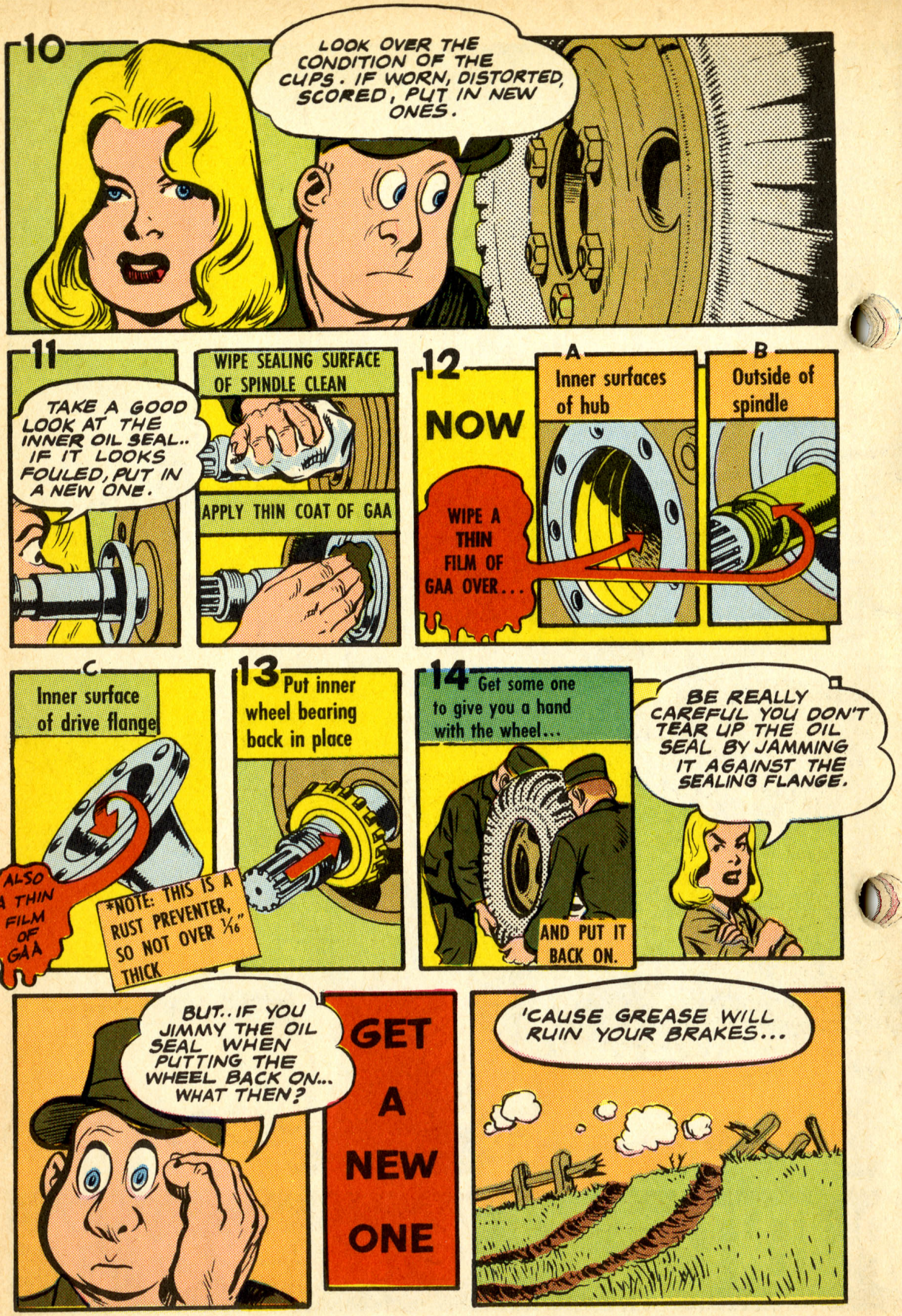

6
Remove outer wheel bearing...
NOW GET SOME HELP ON TAKING OFF THAT WHEEL.
7
OK. Remove inner bearing.
SOAK 'EM IN A DRY CLEANING SOLVENT, OR IN VOLATILE MINERAL SPIRITS
THEN WASH 'EM CLEAN WITH A BRUSH.. DO A THOROUGH JOB, THIS IS AN IMPORTANT STEP
8
DRY 'EM WITH A CLEAN CLOTH
NO NOT WITH AN AIR HOSE
CHECK 'EM GOOD FOR:
PITS
CHIPS
SCORING
WEAR
IF THEY'RE BAD GET NEW BEARINGS
9
Grease the bearings with clean GAA, Amendment 2 and 3, or the new GAA (MIL-6-10924A)
BY HAND
OR
(MAKE SURE SPACES AROUND ROLLERS ARE COMPLETELY FILLED)
BEARING LUBRICATOR


JOE'S Dope Sheet
Though
Don't im
All
Tho
So pack
WE HAVE THE WORLD'S BEST EQU

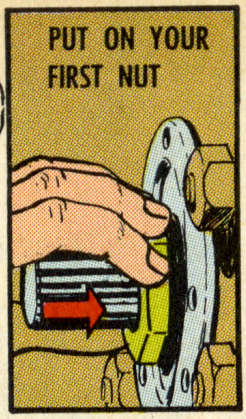

JOE'S Dope Sheet
Though its rollers are made out of steel,
Don't imagine a bearing can't feel
All the cuts, scrapes and bruises
That will come from misuses...
So pack it and seat it for real!
U.S. ARMY
WE HAVE THE WORLD'S BEST EQUIPMENT...Take care of it

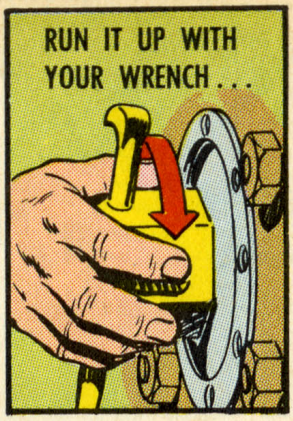


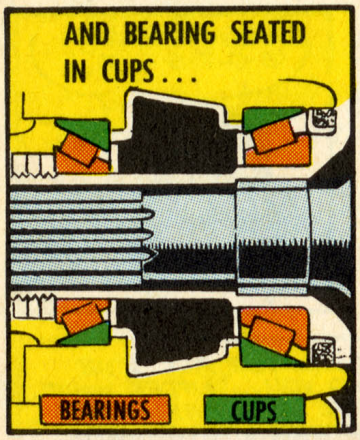
UIPMENT ...Take care of it


10
LOOK OVER THE CONDITION OF THE CUPS. IF WORN, DISTORTED, SCORED, PUT IN NEW ONES.
11
TAKE A GOOD LOOK AT THE INNER OIL SEAL.. IF IT LOOKS FOULED, PUT IN A NEW ONE.
WIPE SEALING SURFACE OF SPINDLE CLEAN
APPLY THIN COAT OF GAA
12
NOW
WIPE A THIN FILM OF GAA OVER...
A
Inner surfaces of hub
B
Outside of spindle
C
Inner surface of drive flange
ALSO A THIN FILM OF GAA
13
Put inner wheel bearing back in place
*NOTE: THIS IS A RUST PREVENTER, SO NOT OVER 1/16" THICK
14
Get some one to give you a hand with the wheel...
AND PUT IT BACK ON.
BE REALLY CAREFUL YOU DON'T TEAR UP THE OIL SEAL BY JAMMING IT AGAINST THE SEALING FLANGE.
BUT.. IF YOU JIMMY THE OIL SEAL WHEN PUTTING THE WHEEL BACK ON... WHAT THEN?
GET A NEW ONE
'CAUSE GREASE WILL RUIN YOUR BRAKES...

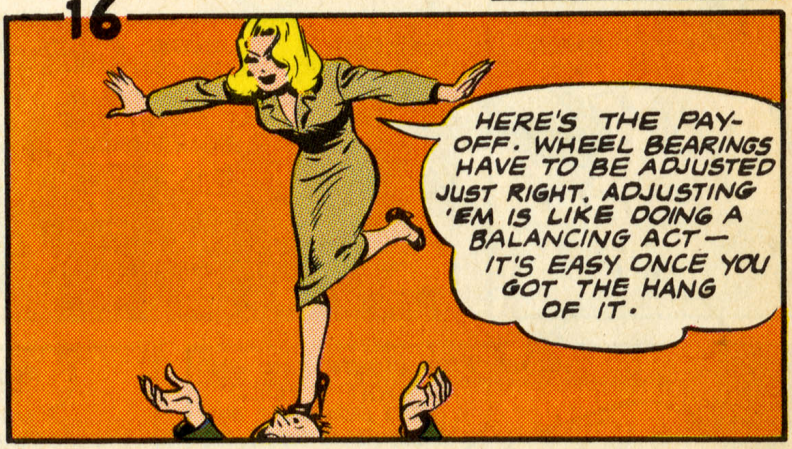
15



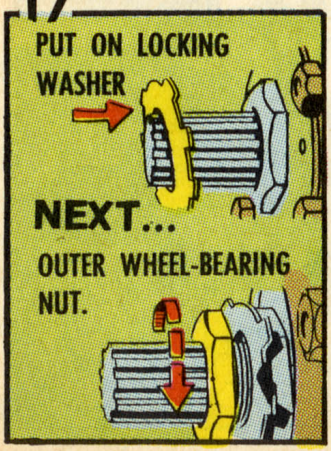


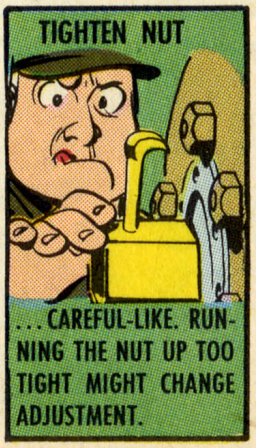


16

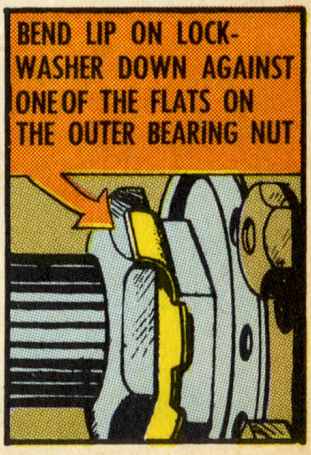


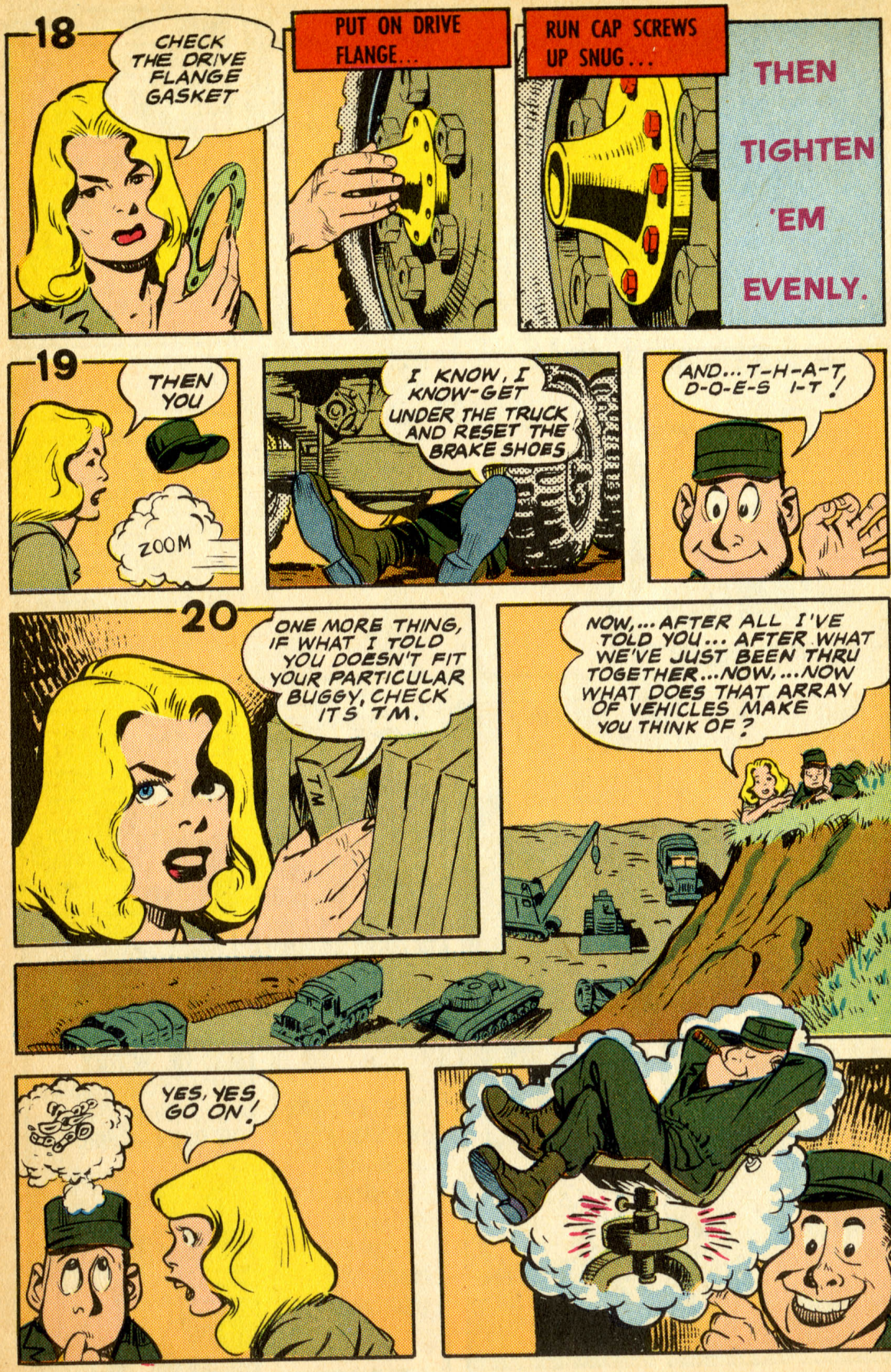
17

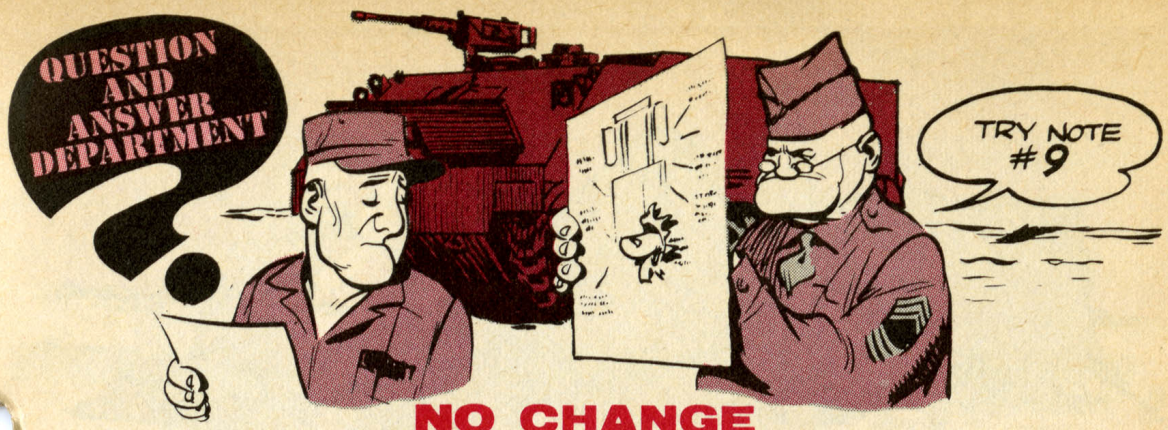




THEN CHECK FOR FREE SPIN WITH NO BINDING (PRE-LOAD) AND NO SLACK (PERCEPTIBLE PLAY) AFTER TIGHTENING NUT.




18
CHECK THE DRIVE FLANGE GASKET
PUT ON DRIVE FLANGE...
RUN CAP SCREWS UP SNUG...
THEN TIGHTEN 'EM EVENLY.
19
THEN YOU
ZOOM
I KNOW, I KNOW-GET UNDER THE TRUCK AND RESET THE BRAKE SHOES
AND... T-H-A-T D-O-E-S I-T!
20
ONE MORE THING, IF WHAT I TOLD YOU DOESN'T FIT YOUR PARTICULAR BUGGY, CHECK ITS TM.
TM
NOW,... AFTER ALL I'VE TOLD YOU... AFTER WHAT WE'VE JUST BEEN THRU TOGETHER... NOW,... NOW WHAT DOES THAT ARRAY OF VEHICLES MAKE YOU THINK OF?
YES, YES, GO ON!



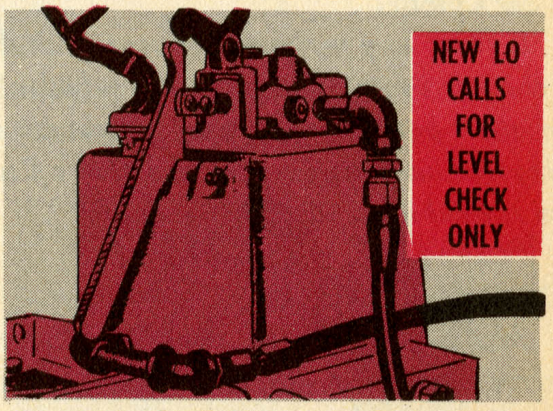
NO CHANGE

Dear Half-Mast,

LO 9-7002 tells us to change the oil in the hydraulic pump (which is used for lifting the ramp on the M59 APC) every 1,000 miles.

Why is this necessary? That oil is not used in any engine and does not get dirty.

Sgt H. F. M



Dear Sgt H. F. M.,

I think you're going by the lubrication chart printed in your TM 9-7002 (March 54), aren't you?

On accounta the new lubrication order, LO 9-7002 (30 Jan 58), deletes the requirement for changing that oil at 1000-mile intervals and only calls for checking the oil level. Get a copy of the new LO and read note 9.

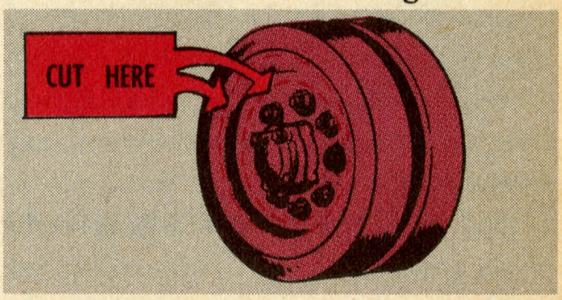
Half-Mast

SHIELD SHY

Dear Half-Mast,

How do we get rid of the mud and sand shields on our M41 tanks? The road-wheel mud shields collect water and then corrode—and the sand shields are more of a hindrance than a help.

MSgt A. E. H.



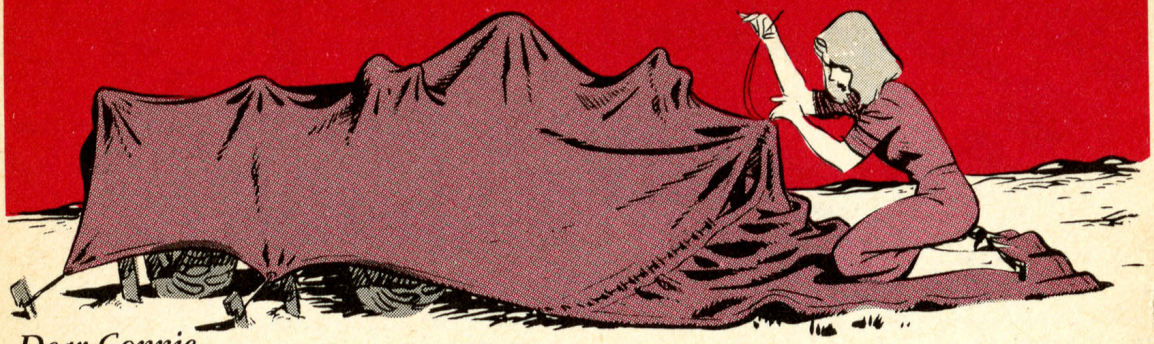
Dear MSgt A. E. H.,

Use TB Ord 403 (12 Jan 51) and its Change 1 (24 Sept 51) to get rid of those mud shields. It tells you how to cut those shields off and clean the road wheels of any rust and corrosion that may have formed.

As far as sand shields go, you can take 'em off and get rid of 'em under the dope laid down in TB Ord 525 (2 Nov 53).

Half-Mast

TENTING TONIGHT



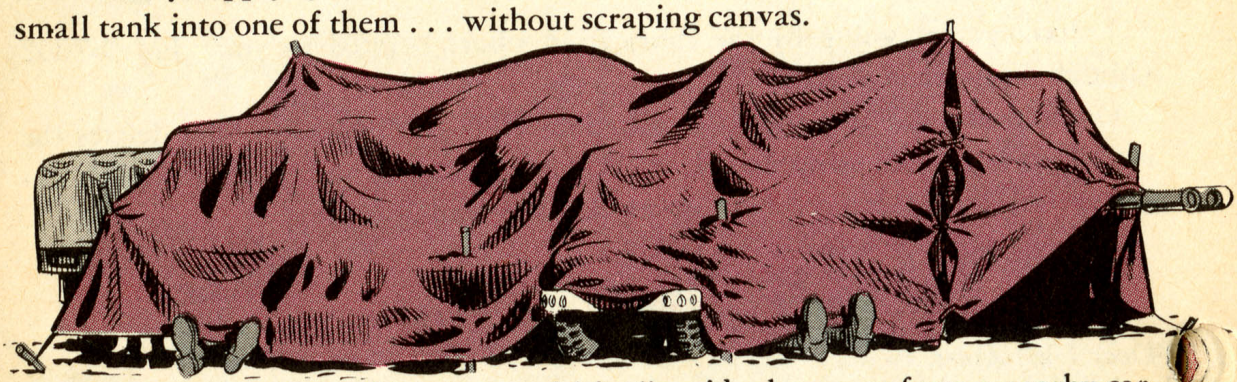
Dear Connie,

Is there any maintenance tent available that'll shelter tanks and other large vehicles? I know the books say vehicles that size will be worked on in buildings or other permanent or semi-permanent shelters. But we just don't have anything like that handy to keep bad weather off us when it comes time to pull maintenance on the vehicles. So what do we do?

Sgt C. C. C.

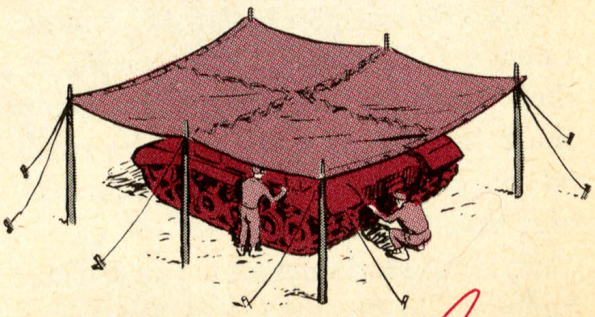
Dear Sgt C. C. C.,

As things stand now, the maintenance shelter tent (QM) is the largest available in the Army supply system for maintenance work. And you can barely squeeze a small tank into one of them . . . without scraping canvas.



So, unless you can "midnight requisition" a side show tent from a nearby carnival, you're going to have to rig something with whatever canvas is handy. For instance . . .

Every tank stocks a big tarpaulin—canvas cover—in its OVM. On the M48, f'rinstance, it's 12 x 12 feet. Tie four of those babies together and you've got a real spread of canvas . . . more than enough to cover the subject. Prop 'em up lean-to style or with posts or whichever way suits you best.



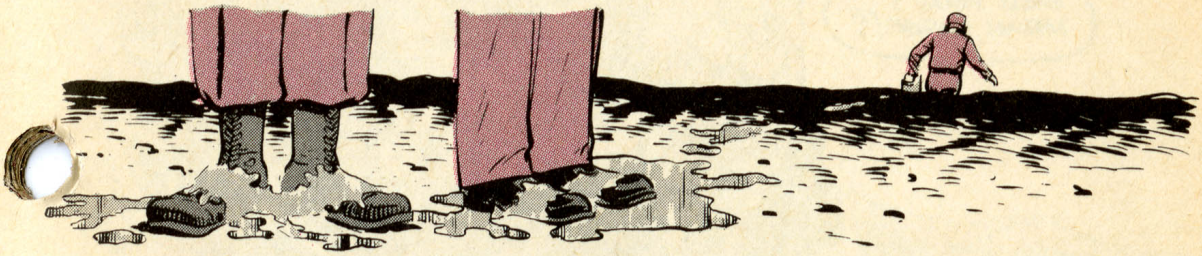
And, of course, lash the whole works down good 'n' tight . . . otherwise, one quick, strong updraft will leave the whole lashup gone with the wind.

Connie

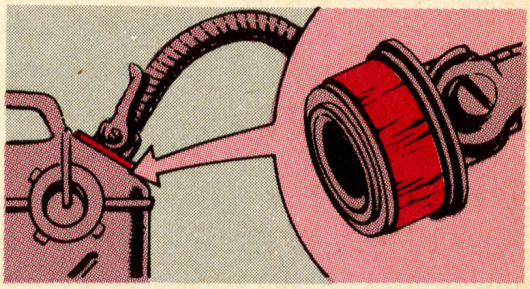
NOZZLE DRIPPING?

Dear Connie,

Some of our boys are getting their feet, hands and everything else wet with gasoline. Mighty, mighty messy—and dangerous. And there's only one reason for it, too: leaky nozzles on those 5-gal jerry cans.



A few leaked so bad there for a while that we had to toss 'em aside. More gas was ending up on the ground or spattered over equipment than was going into fuel tanks.



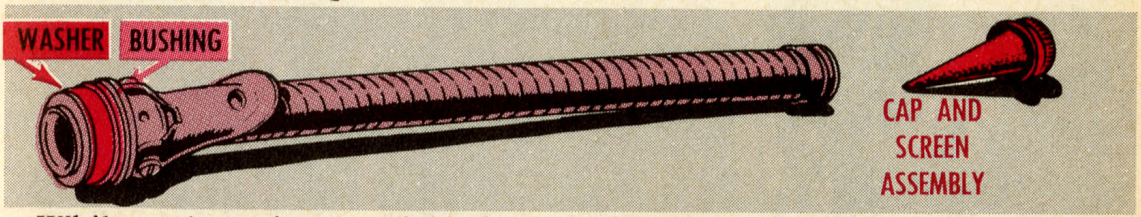
The whole trouble, as we see it, centers on the rubber washer where the spout fits into the collar of the can. That washer dries out and cracks—and soon opens the way for leaks. Which means the whole spout is no good. And it seems a waste to deadline the spout just because a 3-cent washer cracks up.

What do we do? Order a whole new nozzle assembly, or can we latch on to the washer by itself?

SP1 F. M. N.

Dear SP1 F. M. N.,

Know what you mean! Nothin' messier and riskier than dripping gasoline. But hang on to those nozzles, because the washers are available by themselves. Here's the formal rundown: WASHER, non-metallic, synthetic rubber, $1\frac{17}{32}$-in I.D., FSN 5330-228-6638 (QM).



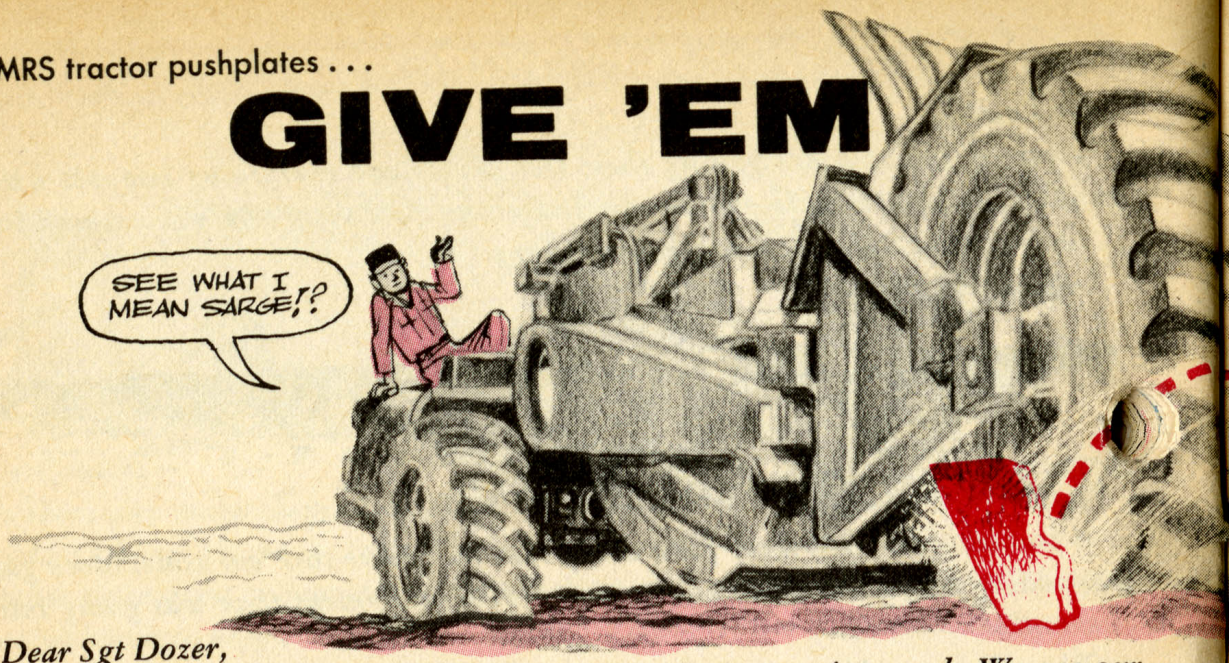
While you're at it, you might check the bushing to see if it needs replacing. If so, yell for: BUSHING, for tube, flexible nozzle, cam type, $2\frac{1}{4}$-in O.D., FSN 7240-132-6431 (QM). Also, the CAP AND SCREEN ASSEMBLY, FSN 7240-132-6433 (QM).

This ought to seal up your trouble pronto. All of these items are listed in the SM 10-1 series DA Supply Manuals.

Connie

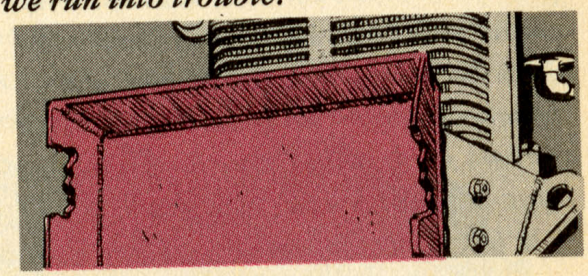
MRS tractor pushplates . . .

GIVE 'EM



Dear Sgt Dozer,

Our outfit is called upon to do a lot of general construction work. We use our MRS tractor to push our earth-movers when they're struggling with a payload and the going gets rough. This is when we run into trouble.



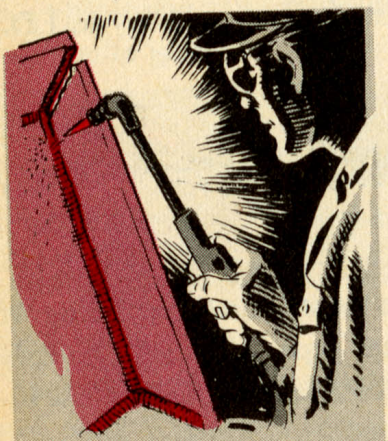
Sometimes the rig rides to one side of the pushplate of the MRS and breaks off large chunks of the side panels. Then we've got a repair job on our hands. We have to pick up the pieces, or scrounge a piece of metal and weld it in place.

Is there any way we can stop the side panels from breaking?

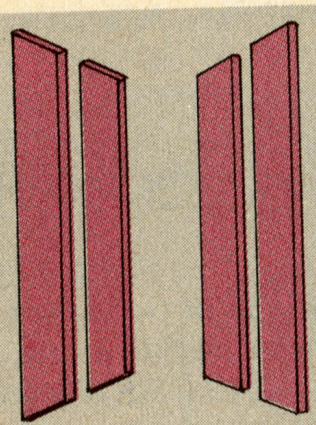
Sp3 A. M.

Dear Sp3 A. M.,

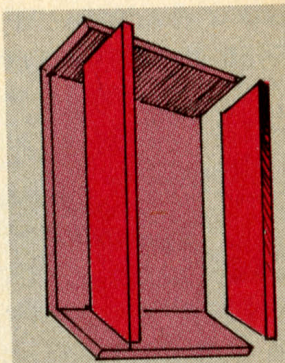
Got the answer for that one right here. Reinforcing the pushplates on your MRS is just a morning's work.



1. First, you cut the side panels off with a torch.



2. Then you cut them in two, lengthwise.



3. If they're beat-up and you can't use them, get a piece of steel plate at least ½-in thick and cut it to fit.

GIVE 'EM SOME BACKING

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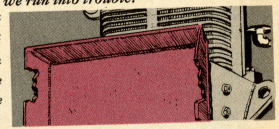

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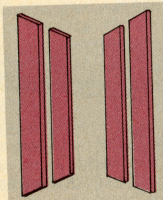

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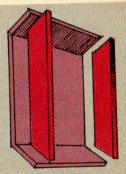

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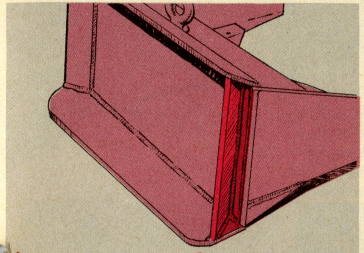
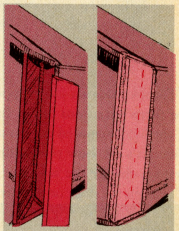


4. Now you weld one of the panel pieces back in place on each side.

5. Move them in from the edge about 5 or 6 inches and weld them at a slant.



6. Now take the other half of the panel (the part that was cut from the original) and back it against the side you just put in.

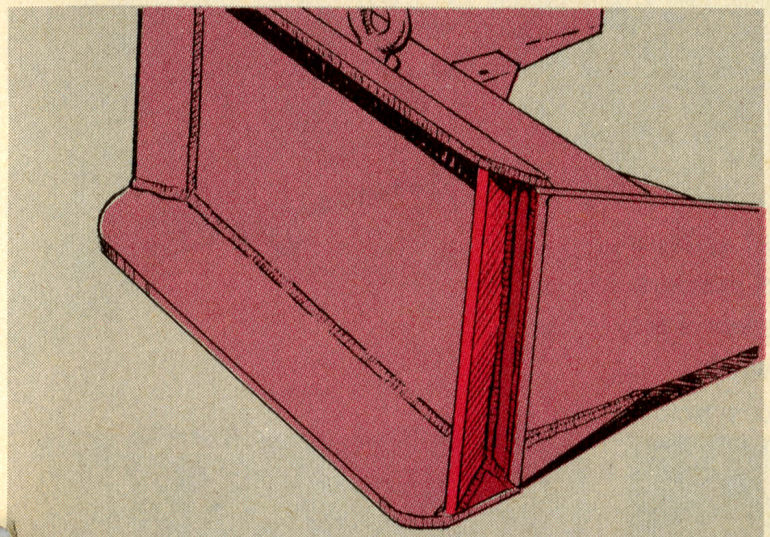
This will not only help to keep the earth-movers you're pushing from jumping off or riding off the sides, but it will take a whole lot more punishment than the original.

You can also use worn out or busted dozer and grader blades for repairing the plates. But, even with these beefed-up push-plates, the operator of the rig doing the shoving can't goof or he'll push his way into trouble. The operators of both pieces of equipment gotta work together so that the chance of the pan sliding off the side of the plate is kept real low.

This pushing bit should be part of the training course that every operator receives.

Sgt Dozer

SOME BACKING



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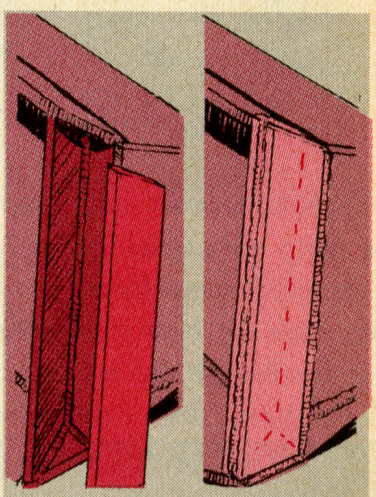

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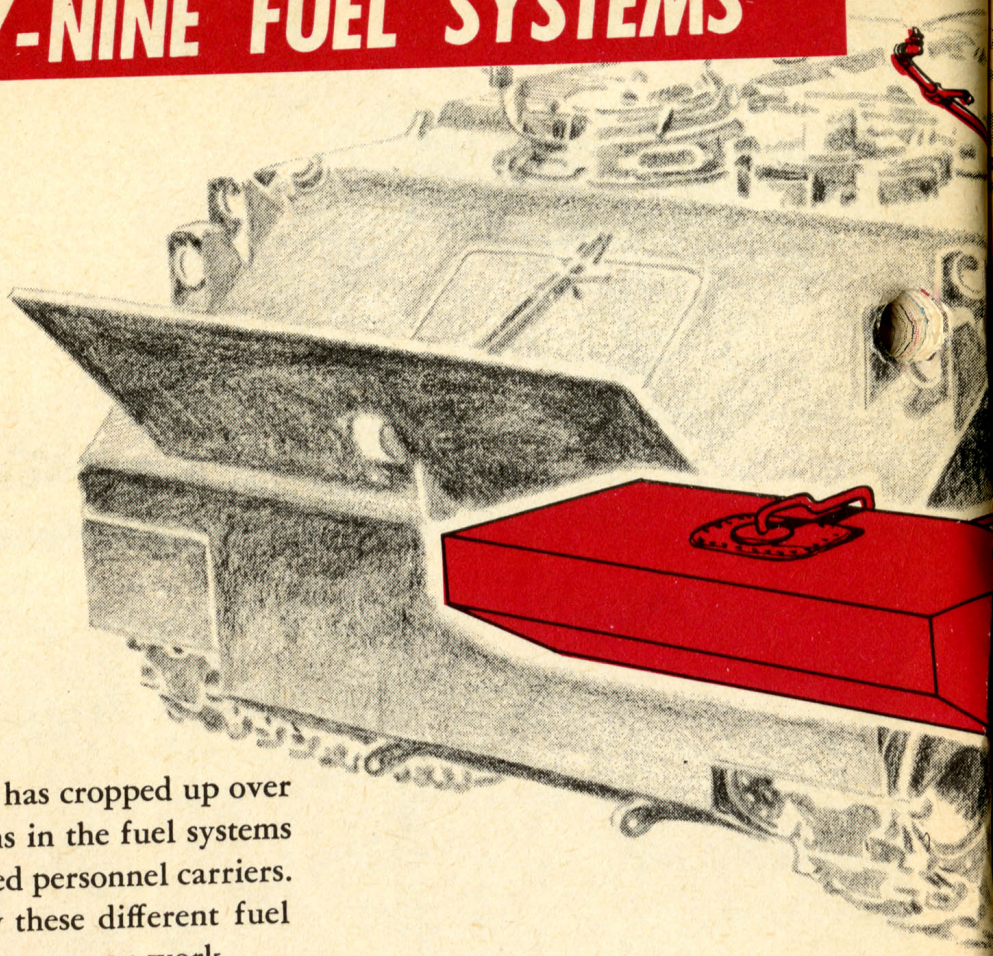
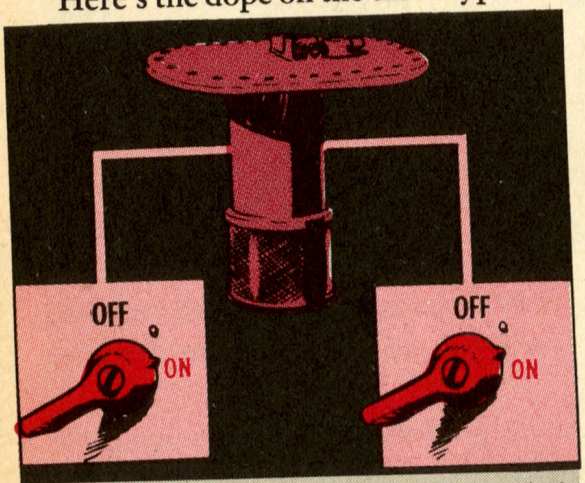
FIFTY-NINE FUEL SYSTEMS

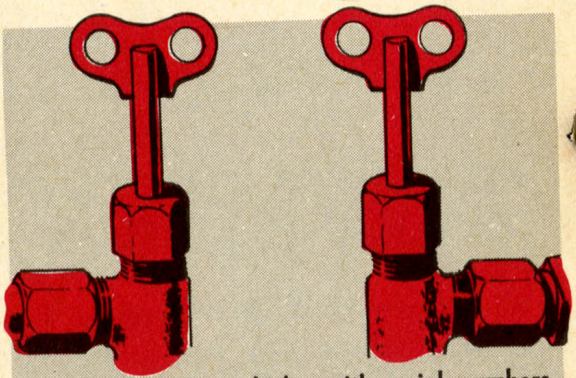


Some confusion has cropped up over the three variations in the fuel systems of the M59 armored personnel carriers. Now let's see how these different fuel systems change the way you work.

Here's the dope on the three types:



1. The early vehicles have one electric fuel pump in the tank. This pump is powered by the 57 circuit and runs whenever either or both ignition switches are turned on. They have a fuel shut-off valve in each engine compartment.



2. Most of the vehicles with serial numbers between F-7 and F-786 have their fuel valves moved up beside the driver's seat where you can reach 'em in a hurry if you have to. (A few have the original fuel lines, but these are being changed in the field.) This group of vehicles also has one fuel pump that runs when either ignition switch is turned on.

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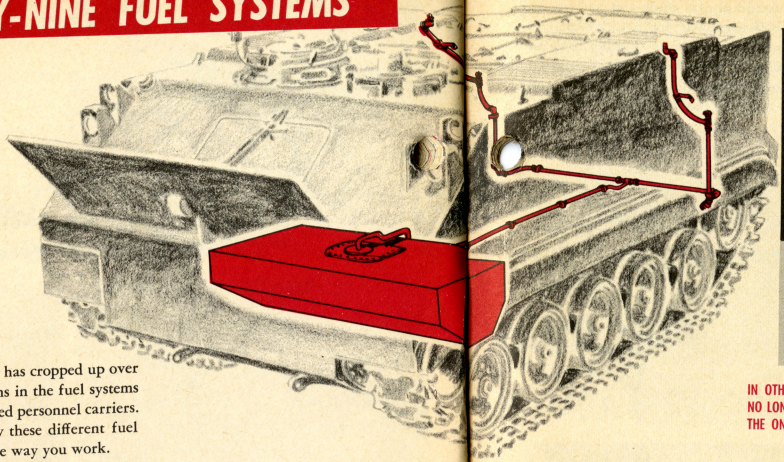

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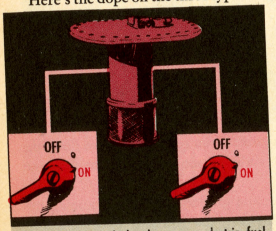

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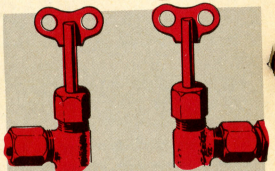

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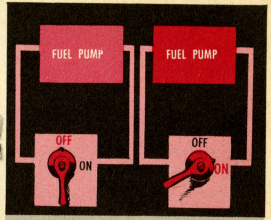
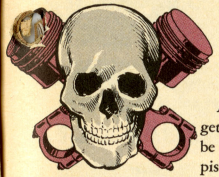


3. Starting with vehicle F-787 there's no fuel valves. Instead there's a separate fuel system for each engine, with its own pump and lines. The electrical connections are set up so that the fuel pump will only run when the ignition is on for the engine that pump serves.

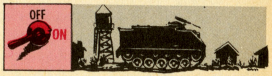
IN OTHER WORDS, TURNING ON ONE IGNITION SWITCH NO LONGER GIVES YOU FUEL AT BOTH ENGINES, ONLY AT THE ONE YOU HAVE TURNED ON.



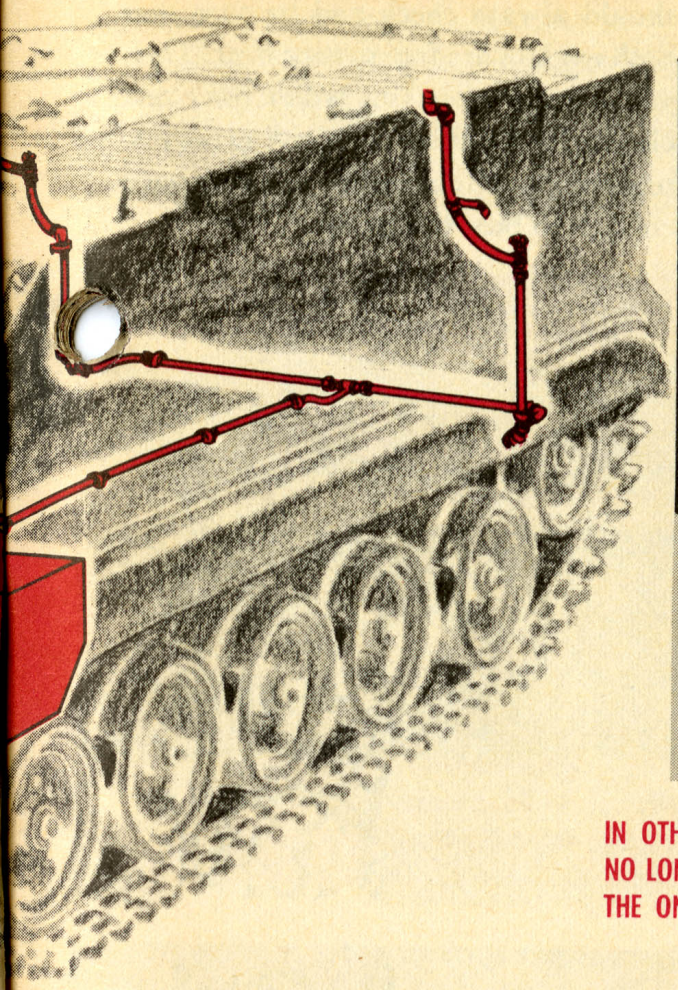
HYDROSTATIC LOCK

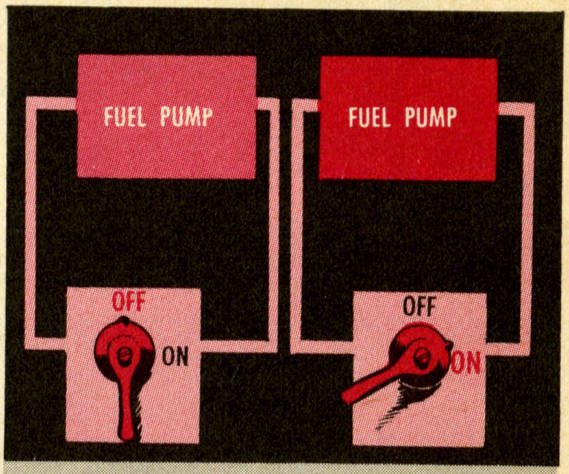
As you know, sometimes stray gas, oil or water will get into the cylinders of an engine, and since liquids can't be compressed, they bring everything to a halt when the piston comes up against them. You call it hydrostatic lock.

It sometimes happens in your M59's if the fuel pump has been left on and is still trying to supply fuel to an engine that's not running.



Gasoline can be forced past the carburetor float valve, through the carburetor into the intake manifold, and on into one or more cylinders.





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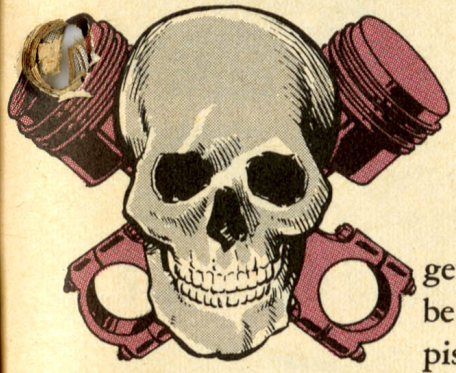

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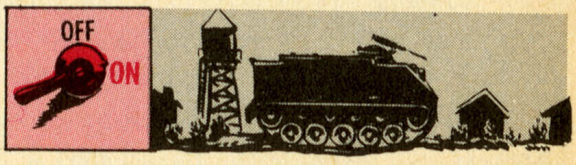

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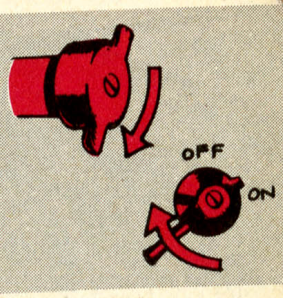
So, before starting the vehicle, you should always check and be sure that both engines are free to turn over. Then you'll know that you won't have one clear cylinder firing and driving the piston up into a liquid-filled cylinder hard enough to bust things up.

CHECK BEFORE STARTING 'EM

✔ To **check** any M59 for locked engines, first turn on the master switch, then turn on the **right** ignition switch. The wiring in all these vehicles is hooked up so that either starter will work when you do this, but you only get ignition at the right engine. So you can turn the left one over with no chance of its starting.

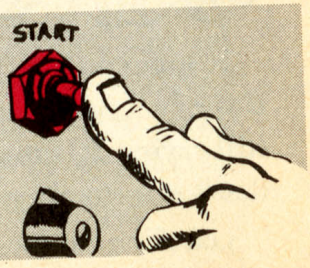


✔ You tickle the left starter button a couple of split-second jabs and listen to be sure the engine doesn't jam (with a "chug" or high starter whine) while being turned over a couple of turns. If it should jam you probably have hydrostatic lock.

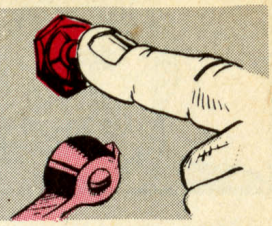
✔ If your left engine turns freely, you then turn your **right** ignition switch off, turn the **left** ignition switch on, and tickle the **right** starter button.

✔ Once again you're turning the ignition switch on for one engine while you check the opposite one, to be sure the engine won't start while you check it.

✔ Now, if the right engine also turns freely, you can then reach over and hit the **left** starter button again. This will crank the left engine, which has its ignition switch on, so it'll start.

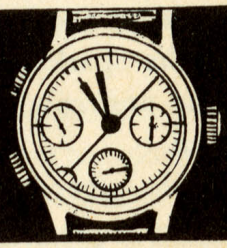


You always start the left engine first in an M59, so the AC charging system will be working to help you start the second engine. It's a simple little idea that'll help keep your batteries up to par.



Next, of course, you turn on the right ignition switch and start your right engine. Just remember to check both engines for free turning before you start either of them—that way you can hear 'em roll over.

OK, that's a routine check, which only takes a few seconds, and should always be made before starting the vehicle.



IF THEY WON'T TURN OVER

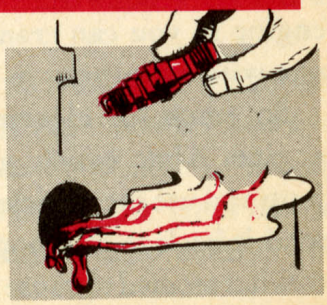
Now let's see what to do if either engine won't turn over (if your troubles aren't electrical).

First, and for gossakes, never keep hitting the starter trying to force it to turn.

And don't try any other brute-force ideas like towing the vehicle or running on one engine to force the other one over.

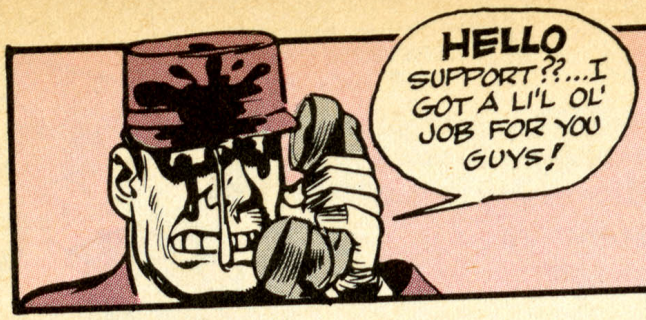
Sometimes you can manhandle a hydrostatically locked engine loose, but while it may seem to run all right, most times there's a bent rod or cracked piston to show up later on, perhaps when you need a good engine right much.

TO CLEAR AN ENGINE

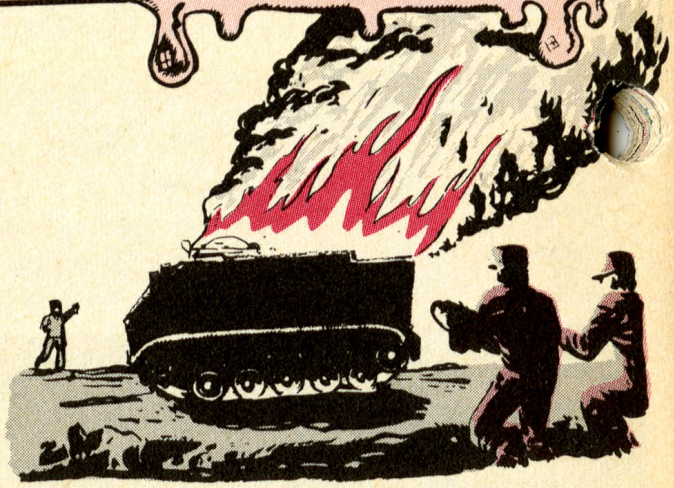


The only safe thing to do with a locked engine is to take out the spark plugs and then crank her over until whatever caused the lock-up can run out the plug holes.

If only gasoline comes out you look for a fuel pump left running by mistake, or perhaps a sticking carburetor float valve.

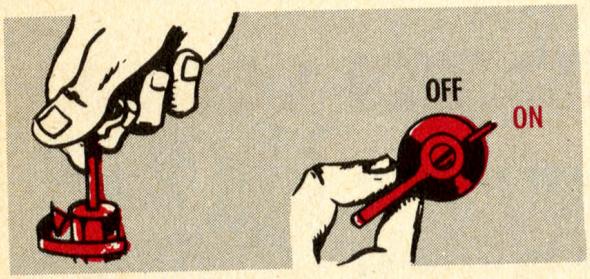


If she spits oil or coolant or both at you, you'd better have a word with the shop men. They'll either change head gaskets or perhaps send the engine back to support.



Now to get back to these different fuel systems. When you're clearing a locked engine you naturally don't want any **more** gasoline coming to the carburetor, since it may be that a stuck float valve is causing your trouble. And you don't want the ignition on, what with the spark plugs out of the engine and raw gasoline flying around.

On the other hand, it doesn't take but a couple-three seconds of cranking to clear the engine once you get the plugs out.

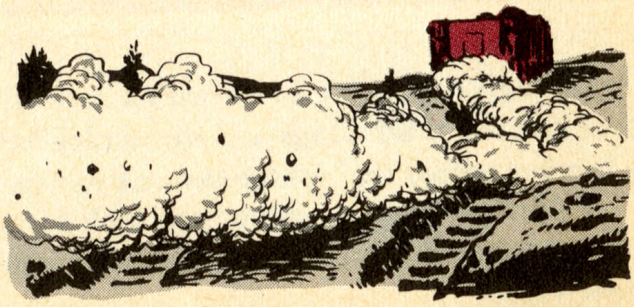


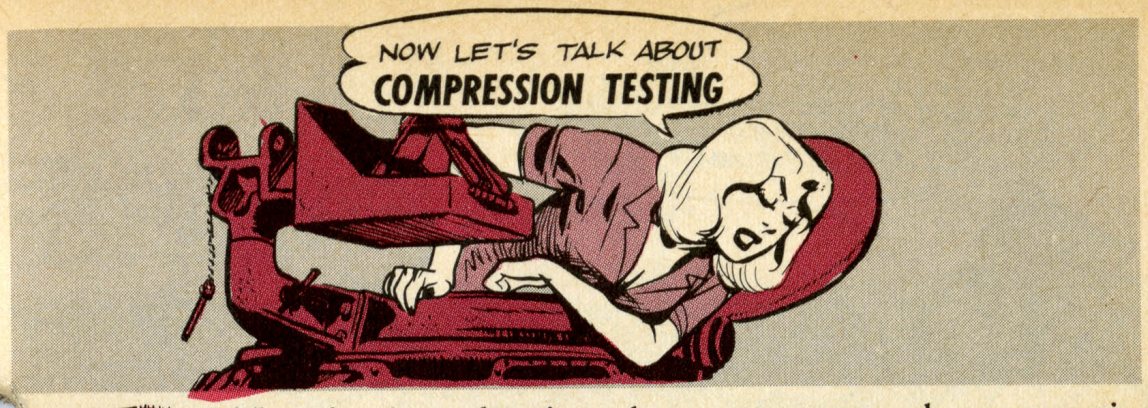
This adds up to you shutting off the fuel valve for the engine you're working on, and then when you're ready to crank it over, you turn on the ignition switch for the **other** engine to energize your starter circuit.

Since you'll only be cranking for a few seconds, you don't need to open the compartment to get at the fuel valve on your good engine if you have the first type of system—with the valves back at the engines. And you don't need to disconnect the fuel pump leads on the newest type of system. But, since it's no extra effort, you might as well shut **both** fuel valves on the middle series—the ones with the valves right beside the driver's seat—just for added safety.

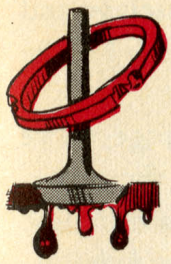
Once again, you see, you're turning on the ignition switch for **one** engine so you can crank the **other** one with no current to its coil.

So much for **clearing** a locked engine. After which you'll button it up and use the vehicle, or perhaps send it back to the shop, according to what seemed to cause the lock-up.





Then there's another time when you want to crank over an engine with neither fuel nor ignition supplied to it. This is while you make your compression test—on the D-service or any other time you suspect a worn out engine or bad valves.

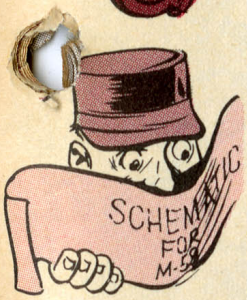


The compression test differs from clearing a locked engine in that you'll have to crank the engine a lot longer. First, of course, you'll be going down the line checking each cylinder.

Then perhaps you'll have to recheck one or more low cylinders to be sure you read 'em right, and then you'll want to pour in a little oil and check again to see if the compression loss is due to bad rings or to leaking valves. That adds up to quite a bit of cranking.

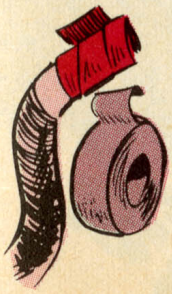
So, you can't very well have the fuel pump running on an open line to the engine you're not testing. You might possibly run enough gasoline past the carburetor to lock it up while you were testing the other one.

OK, so for compression testing, you'll close both fuel valves on either of the one-pump systems. This time it'll pay you to open up the engine compartments to get at both valves. (Besides, chances are you'll test both engines—one right after the other.)



In this case, if you're working on one of the latest models—the type with two fuel-pumps and no shut-off valves—you'd better reach around behind the instrument panel and disconnect the No. 12 lead from the left ignition switch and the No. 212 lead from the right ignition switch.

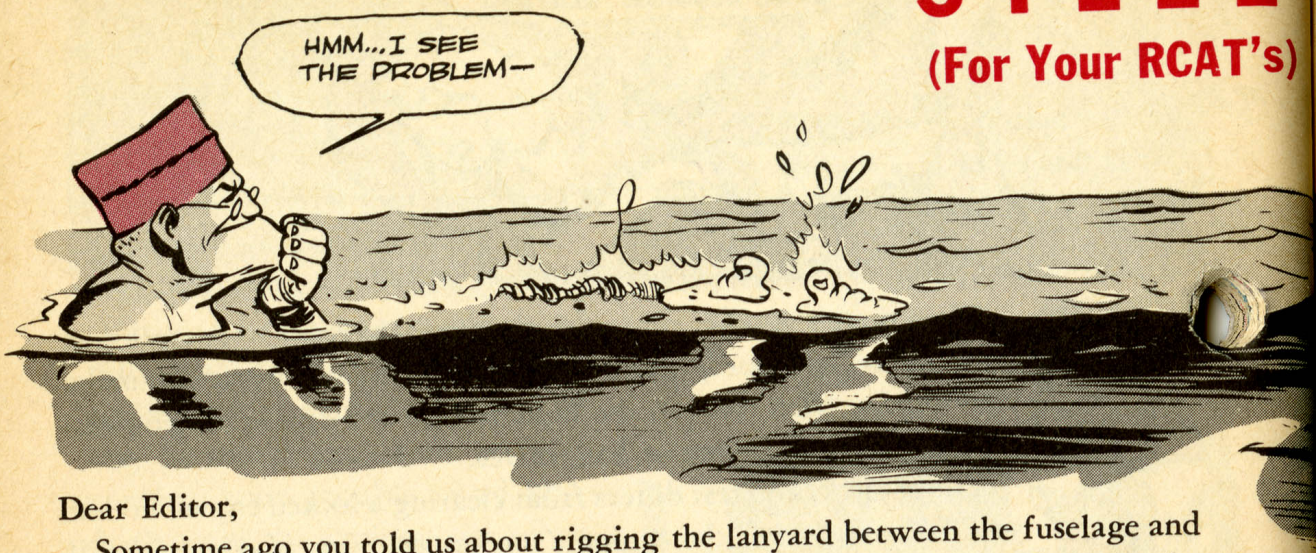
In the later tanks these leads control both the ignition and the fuel pumps for their engine, while the No. 77 leads supply the starter solenoids.



You'll find the number stamped on the little aluminum tag clipped around the lead at the connectors. **Put a little tape over the hot lead before you turn on the switch to prevent any chance of arcing.**

Then, of course, with the fuel valves shut, or the leads disconnected, you once more use each ignition switch to supply starter current to crank the **other** engine.

STEEL
(For Your RCAT's)

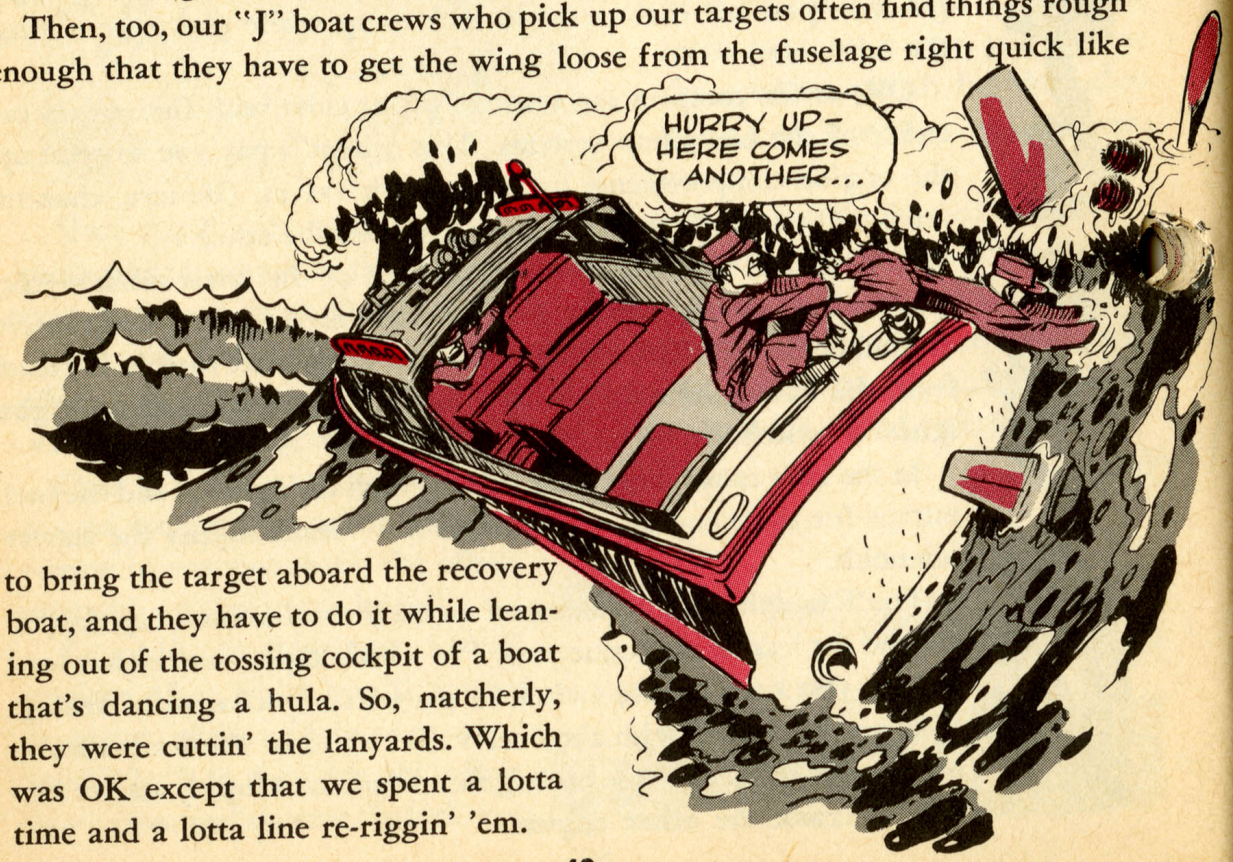


Dear Editor,

Sometime ago you told us about rigging the lanyard between the fuselage and the wing of our RCAT's to keep them together and give better flotation for the fuselage after a water landing.

This was a fine deal, except that up here at the Oswego Firing Range we've found a couple of extra problems. First of all, all our landings are in the water, and we frequently found that the impact was enough to part that parachute-line lanyard. Either the lanyard parted when the target hit the water, or the wave action was enough to snap it later on. Lake Ontario can be pretty rough on occasion.

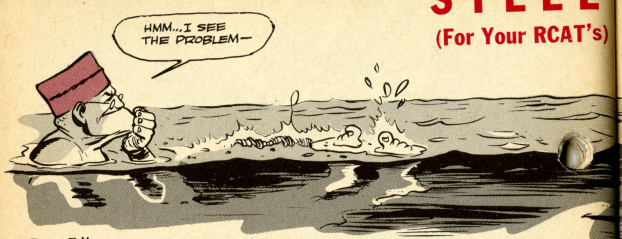
Then, too, our "J" boat crews who pick up our targets often find things rough enough that they have to get the wing loose from the fuselage right quick like



to bring the target aboard the recovery boat, and they have to do it while leaning out of the tossing cockpit of a boat that's dancing a hula. So, natcherly, they were cuttin' the lanyards. Which was OK except that we spent a lotta time and a lotta line re-riggin' 'em.

STEEL LANYARD

(For Your RCAT's)



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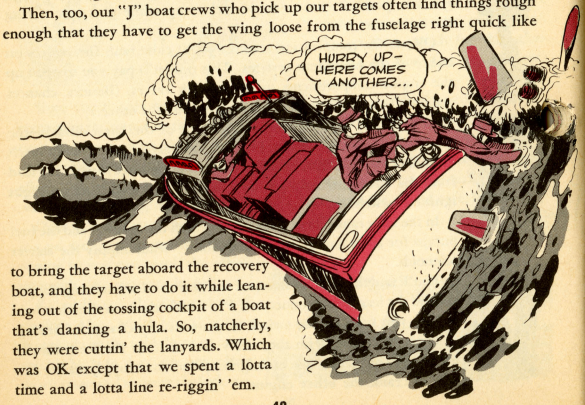

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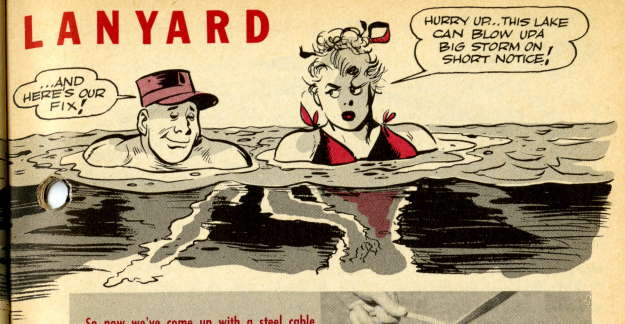
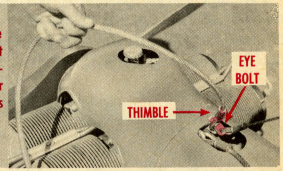
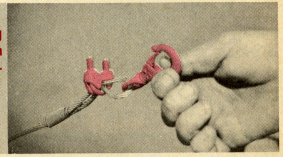


So now we've come up with a steel cable instead of the nylon cord. We used a short length of a rear parachute riser cable and fastened it to one of the forward parachute riser thimbles with the attaching eye-bolt which is secured from an expended aerial target.



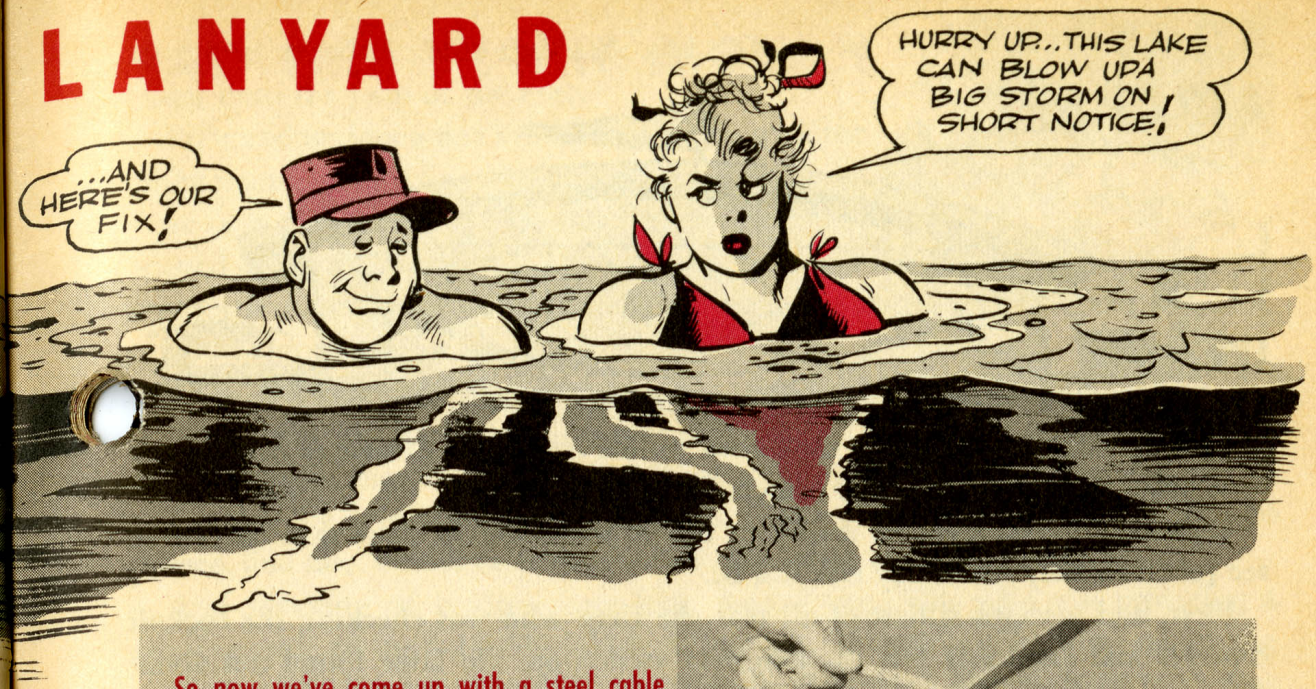
At the wing end we used a galvanized spring hook and a cable clamp which we got from a local marine supply house on local procurement. They cost $1.25 per target.



The cable is led back parallel to the parachute riser and the snap hook is snapped into the wing-lifting eye. In rough water our recovery crews can get it loose right fast...faster than they could cut the old line. Since we went to these steel lanyards we haven't lost one target from breakage.

Shop gang
40th AAA Det (RCAT)
Oswego Firing Range, N. Y.

LANYARD



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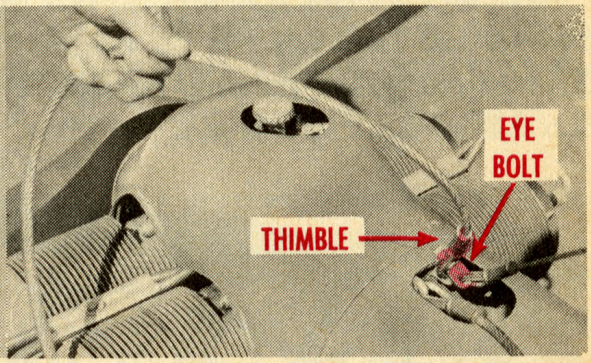

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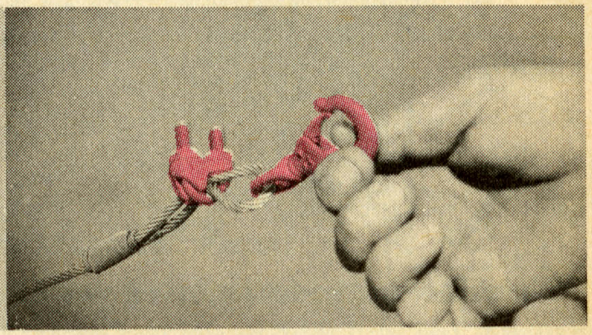

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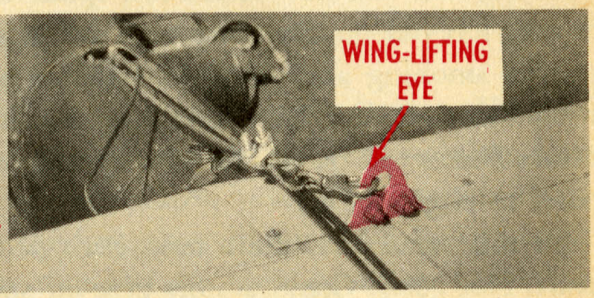

Shop gang
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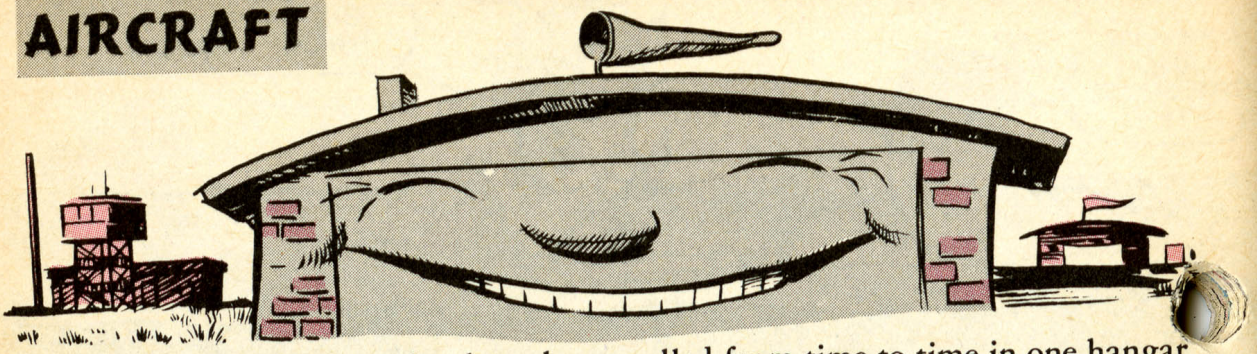
Oswego Firing Range, N. Y.

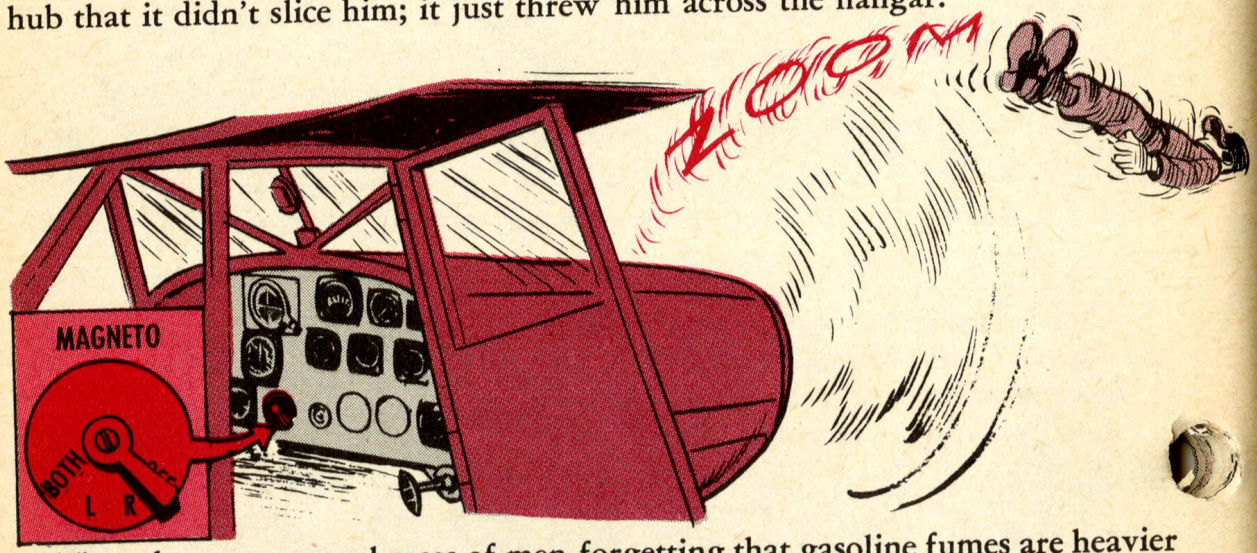
HAVE A HAPPY HANGAR



Here's a list of boners that have been pulled from time to time in one hangar or another. Each one has made somebody most unhappy.

O'course, you'd never be guilty of any of these, but let's run through 'em to see just how silly somebody else can be.

First, and perhaps silliest of all was the chap who was checking the cockpit controls and carelessly left the magneto switch on. He later found out about this when he pulled the prop through. Fortunately, he was close enough to the hub that it didn't slice him; it just threw him across the hangar.



Then there are several cases of men forgetting that gasoline fumes are heavier than air, and will flow to the low spots. The hottest example is the case of a gas bucket left out on the ramp on a hot windless day. Somebody over in the approved smoking area dropped a match and the whole hardstand was covered with flame. Didn't hurt anything, but it sure pointed out the unexpected distances fumes can travel. (And they shouldn't have been using gasoline to wash parts to begin with.)

In this same line, there have been people who used electric drills inside aircraft. Not good! Commutators give off sparks. Air drills are the only safe thing to use around any aircraft once the fuel tanks have been filled.

Loose tank baffles and leaking gas tanks have been caused by not supporting the weight of the gas hose when filling the wing tanks on an L-19. The

long filler nozzle catches the baffle and pries on it. Hang onto the loop of the hose.

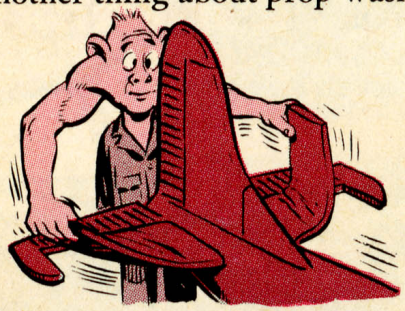
Pilot and taxi-men don't make any points with the maintenance gang if they get careless with their prop-wash or rotor down-wash around aircraft which are opened up for maintenance. The storm of dust is hard on the aircraft and the mechanics. Kill the engines and wheel your ship that last few feet into the tie-down line.

Then there are the thoughtless types who park an aircraft just inside the hangar doors and start a landing gear repair job. The thought never enters their empty noggins that a fire may make it essential to evacuate the other aircraft in the hangar, or at least call for fire equipment to run inside. Aircraft that can't be moved, and fast, should be parked to one side, well into the hangar.

And speaking of landing gear jobs, there's the bloke who was replacing a landing gear on an L-19. He had both springs off and was working under the aircraft while it was suspended from a hoist. Happened that the hoist held, that time, but it would have been so much safer to slip some blocking under the fuselage before removing the landing gear.

Didja ever see how far you can skate when a rubber shoe sole hits an oil spot on smooth concrete? It's painful, too. Drip pans are nice to have, **and use.**

Another thing about prop-wash: Only a knucklehead will kick his tail around toward parked helicopters without checking to be sure their blades are tied. This can be real expensive.



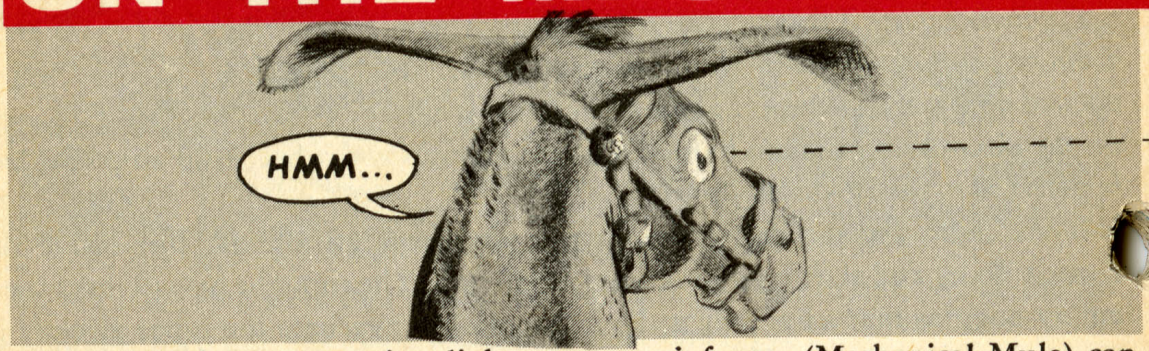
Now and again you see some muscle-man lifting an L-20 by the horizontal stabilizer. His muscles must also run from ear to ear, because he'll be standing right beside the hole marked LIFT-BAR. Can't read?

Heard about an aircraft engine that came out of the shipping can, got three feet off the floor, fell and was smashed, and went right back into the can for another depot overhaul. It seems the guy lifting it didn't know all about how to use his hoist. He's learning while he pays for the engine.

And then, of course, there's the nameless welder who is also faceless. He didn't read and follow TO 1-1-3 exactly when preparing a gas tank for welding. Careless steaming or filling with water isn't enough. Tanks have to be steamed all day with the largest holes **down** to be sure the fumes are all out. And then you gotta be extremely careful. And don't forget that you can build up an explosive mixture of welding gases inside **any** closed tank if you get careless.

Well, like we said, none of you will do any of these fool tricks, but keep an eye on the other guy.

ON THE MECHANICAL

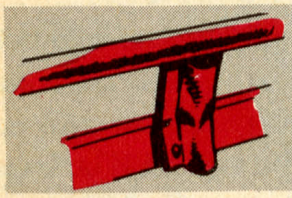


Your M274 ½-ton carrier, light weapons, infantry (Mechanical Mule) can do a lot of things for you, and all it asks is good care. A little primping now and then, and it'll do most anything you ask.

The guide below is for you—to help you keep the Mule in the kind of shape it needs to be in. When using this guide, focus these up outta your mind in big type:

Deficiencies that make the vehicle unsafe to operate or which can lead to real bad damage are the major ones—the ones that must be fixed before taking the vehicle on the road. In the guide below, these are shown in bold face type.

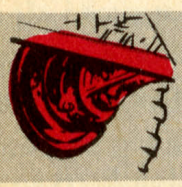
Awright, now—BE YOUR OWN INSPECTOR.



GENERAL VEHICLE APPEARANCE—Dirty, rust spots, dents. Split seams (welds must be intact).

STARTER CABLE—**Broken**, kinked. Doesn't operate freely.

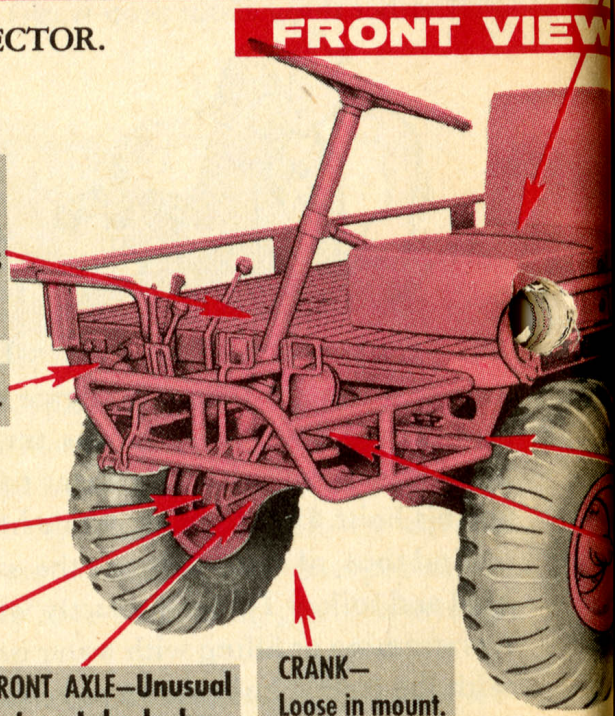
FRONT AND REAR AXLE DROP GEAR HOUSINGS—Flange bolts loose.



FRONT AXLE HOUSING—Rusty, badly scored. **Flange bolts loose.**

FRONT AXLE—**Unusual noises. Lube leaks.**

CRANK—Loose in mount.



ON THE MECHANICAL MULE

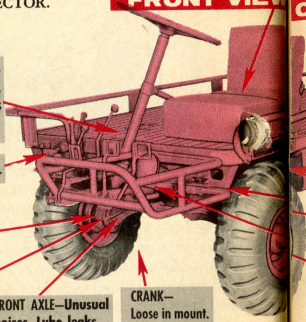
Your M274 ½-ton carrier, light weapons, infantry (Mechanical Mule) can do a lot of things for you, and all it asks is good care. A little primping now and then, and it'll do most anything you ask.

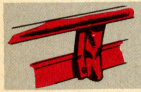
The guide below is for you—to help you keep the Mule in the kind of shape it needs to be in. When using this guide, focus these up outta your mind in big type:

Deficiencies that make the vehicle unsafe to operate or which can lead to real bad damage are the major ones—the ones that must be fixed before taking the vehicle on the road. In the guide below, these are shown in bold face type.

Awright, now—BE YOUR OWN INSPECTOR.

FRONT VIEW OF VEHICLE





GENERAL VEHICLE APPEARANCE—Dirty, rust spots, dents. Split seams (welds must be intact).

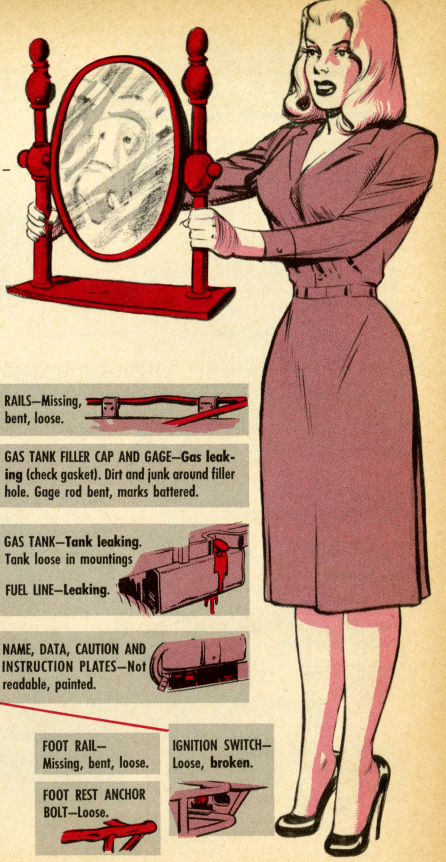
STARTER CABLE—Broken, kinked. Doesn't operate freely.

FRONT AND REAR AXLE DROP GEAR HOUSINGS— Flange bolts loose.

FRONT AXLE HOUSING— Rusty, badly scored. **Flange bolts loose.**

FRONT AXLE—Unusual noises. Lube leaks.

CRANK— Loose in mount.



SEAT—Loose mountings. Cushions worn, torn, frayed.

RAILS—Missing, bent, loose.

GAS TANK FILLER CAP AND GAGE—Gas leaking (check gasket). Dirt and junk around filler hole. Gage rod bent, marks battered.

GAS TANK—Tank leaking. Tank loose in mountings

FUEL LINE—Leaking.

NAME, DATA, CAUTION AND INSTRUCTION PLATES—Not readable, painted.

RAIN DEFLECTOR AND PRE-CLEANER—Missing, loose, bent, clogged.

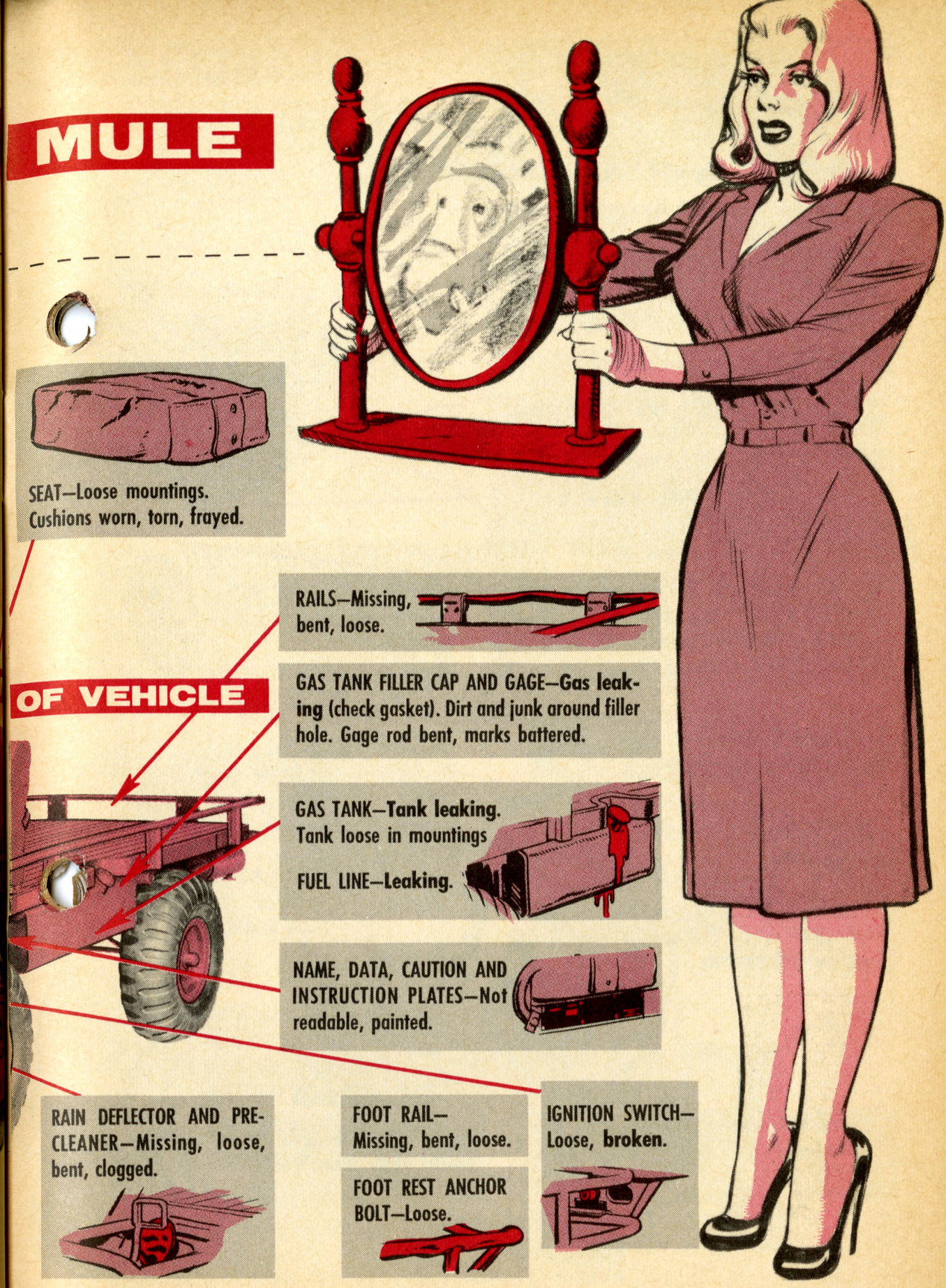
FOOT RAIL— Missing, bent, loose.

FOOT REST ANCHOR BOLT—Loose.

IGNITION SWITCH— Loose, **broken.**

MULE

OF VEHICLE



SEAT—Loose mountings. Cushions worn, torn, frayed.

RAILS—Missing, bent, loose.

GAS TANK FILLER CAP AND GAGE—Gas leaking (check gasket). Dirt and junk around filler hole. Gage rod bent, marks battered.

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FUEL LINE—Leaking.

NAME, DATA, CAUTION AND INSTRUCTION PLATES—Not readable, painted.

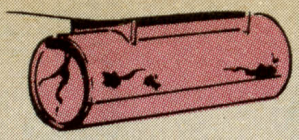
RAIN DEFLECTOR AND PRE-CLEANER—Missing, loose, bent, clogged.

FOOT RAIL—Missing, bent, loose.

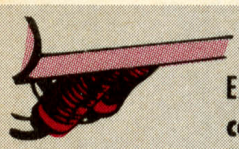
FOOT REST ANCHOR BOLT—Loose.

IGNITION SWITCH—Loose, broken.

REAR VIEW



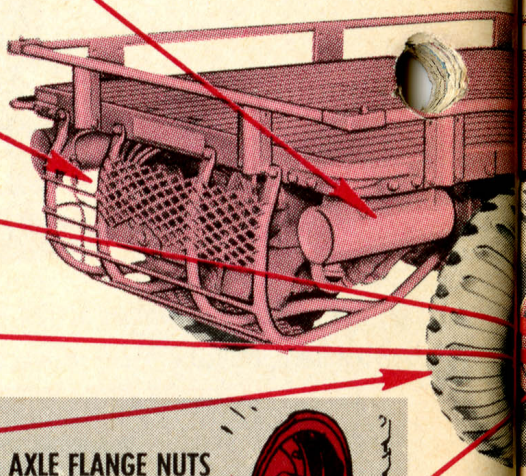
MUFFLERS—Holes in muffler, cracked. Loose.



EXHAUST PIPES—Clogged, collapsed, cracked. Dented. Clamps loose.

WHEEL HUBS—Lube leaking.

STUDS—Broken. Bent.



TIRES—Tread worn smooth (time for recapping); cut to fabric; **uneven wear.** Incorrect tire pressure (correct pressure: 12-PSI). Valves bent. Valve caps missing.

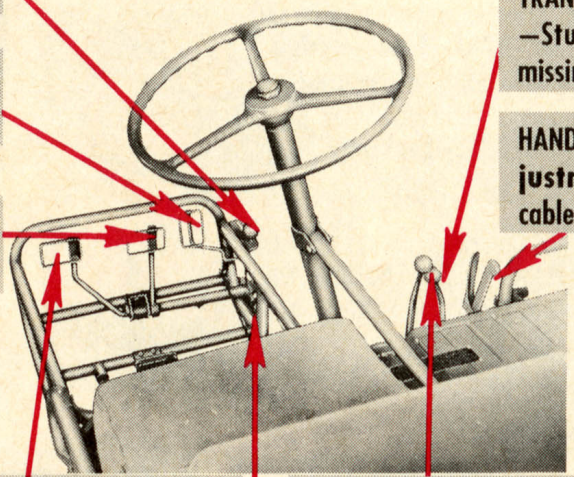
RIM AND AXLE FLANGE NUTS —Missing, loose. Rims dented.

OPERATING CONTROLS

HAND THROTTLE—Knob missing. Hard to operate.

ACCELERATOR—Sticks, loose.

BRAKE PEDAL—Improper adjustment.



TRANSFER GEARSHIFT LEVER —Stuck, loose, bent, knob missing.

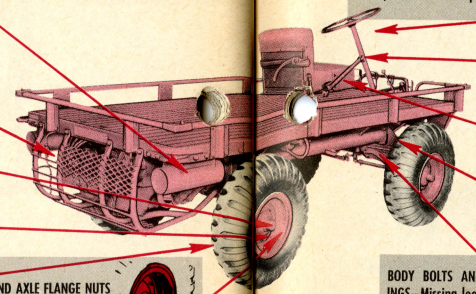
HANDBRAKE—Incorrect adjustment. Doesn't hold, cable busted.

CLUTCH PEDAL—Improper free play (should travel free ½ to 1 inch), grabs, chatters, slips.

TRANSMISSION SHIFT LEVER—Stuck, loose, bent, knob missing.

ACCELERATOR LINKAGE—Bent, stuck.

REAR VIEW OF VEHICLE



MUFFLERS—**Holes in muffler, cracked.** Loose.

EXHAUST PIPES—**Clogged, collapsed, cracked.** Dented. Clamps loose.

WHEEL HUBS—Lube leaking.

STUDS—**Broken.** Bent.

TIRES—**Tread worn smooth** (time for recapping); cut to fabric; **uneven wear.** Incorrect tire pressure (correct pressure: 12-PSI). Valves bent. Valve caps missing.

RIM AND AXLE FLANGE NUTS—**Missing, loose.** Rims dented.

STEERING WHEEL—**Bent,** loose, too much free play.

TWO- TO FOUR-WHEEL STEER PIN—**Rusted.**

STEERING COLUMN—Dented.

STEERING COLUMN BRACE—Missing, doesn't hold steering column.

FRAME—**Bent, cracked,** side rails and cross members loose.

BODY BOLTS AND MOUNTINGS—Missing, loose, broken.

OPERATING CONTROLS

HAND THROTTLE—Knob missing. Hard to operate.

ACCELERATOR—**Sticks, loose.**

BRAKE PEDAL—**Improper adjustment.**

TRANSFER GEARSHIFT LEVER—Stuck, loose, bent, knob missing.

HANDBRAKE—**Incorrect adjustment. Doesn't hold,** cable busted.

CLUTCH PEDAL—Improper free play (should travel free ½ to 1 inch), **grabs, chatters, slips.**

TRANSMISSION SHIFT LEVER—**Stuck,** loose, bent, knob missing.

ACCELERATOR LINKAGE—**Bent, stuck.**

UNDERNEATH THE VEHICLE

TOW BAR—Missing, bent, loose.

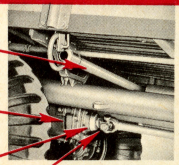
TRANSMISSION—**Leaky drain plug** (check for looseness). Bolts loose. **Whine or howl.**

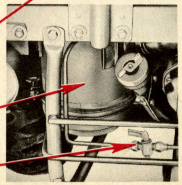
OIL SEAL—**Leaks.**

UNIVERSAL JOINTS—Loose. (Grease fittings on each shaft should face the same direction).

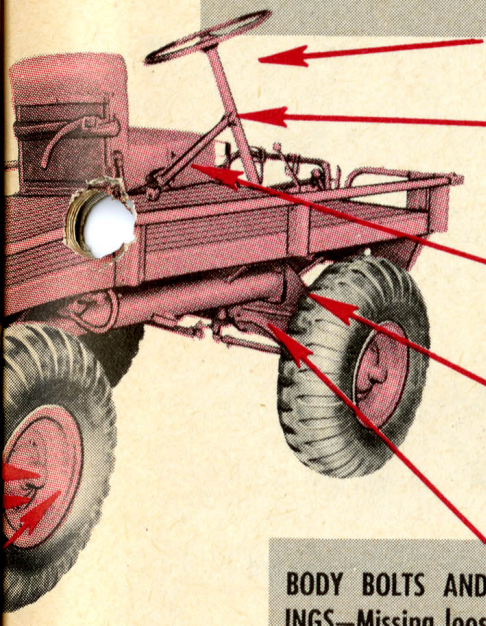
AIR CLEANER—Oil level low (must be up to level mark).

FUEL SHUT-OFF VALVE—**Leaks.** Doesn't operate freely.





OF VEHICLE



STEERING WHEEL—Bent, loose, too much free play.

TWO- TO FOUR-WHEEL STEER PIN—**Rusted.**

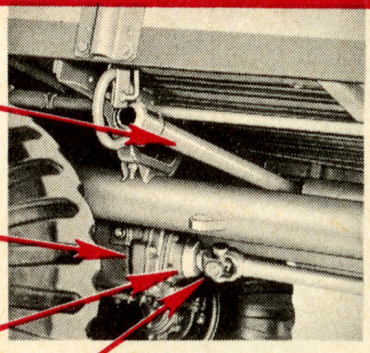
STEERING COLUMN—Dented.

STEERING COLUMN BRACE—Missing, doesn't hold steering column.

FRAME—**Bent, cracked,** side rails and cross members loose.

BODY BOLTS AND MOUNTINGS—Missing, loose, broken.

UNDERNEATH THE VEHICLE

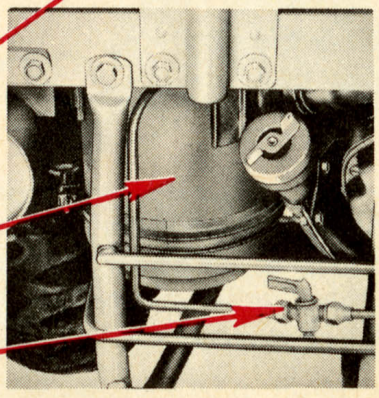


TOW BAR—Missing, bent, loose.

TRANSMISSION—**Leaky drain plug** (check for looseness). Bolts loose. **Whine or howl.**

OIL SEAL—**Leaks.**

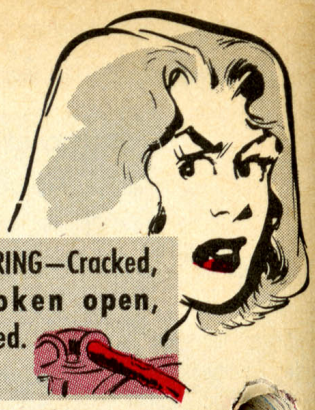
UNIVERSAL JOINTS—Loose. (Grease fittings on each shaft should face the same direction).



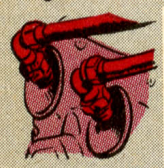
AIR CLEANER—Oil level low (must be up to level mark).

FUEL SHUT-OFF VALVE—**Leaks.** Doesn't operate freely.

ENGINE



SPARK PLUGS—Cracked, loose, dirty. Grommets split, missing.

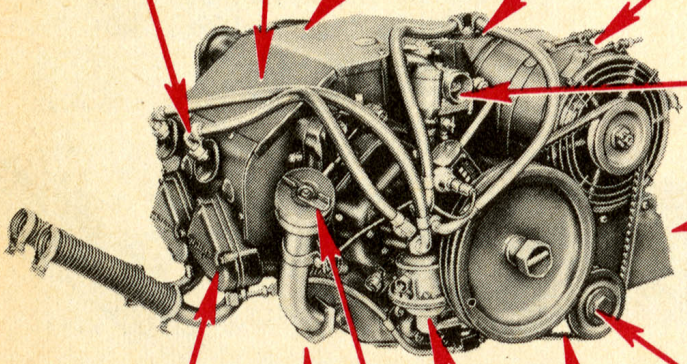


SHROUD—Loose.

MANIFOLDS—Leaking, connections loose.

IGNITION WIRING—Cracked, shield broken open, threads crossed.

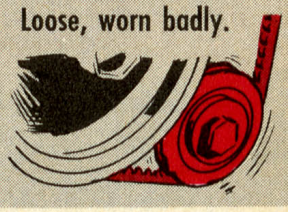
BLOWER—Bolts missing, loose. Clamps loose, broken.



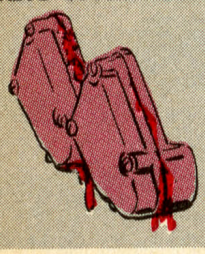
CARBURETOR—Engine idling too fast or too slow.

OIL COOLER—Clogged.

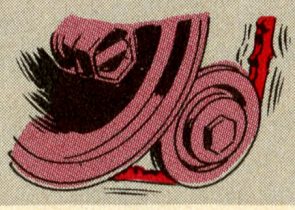
IDLE PULLEY—Loose, worn badly.



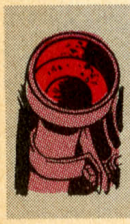
VALVE COVERS—Leaks.



BLOWER BELT—Belt cracked, dangerously frayed or shredded. Incorrect adjustment (correct adjustment: 1/4-in deflection).

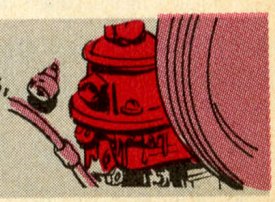


OIL PAN—Gasket leaking, plug leaking, bolts loose.



CRANKCASE OIL—Level too low (no lower than 1/2 inch below top full mark); too high (no higher than 1/8 inch above top full mark). Cap missing, gasket damaged or missing.

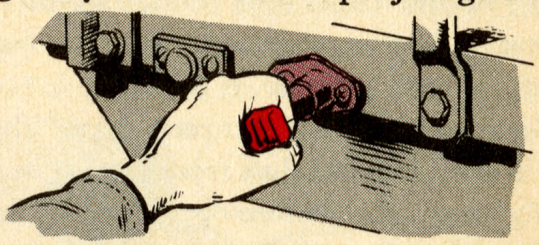
FUEL PUMP—Leaks, broken, loose.



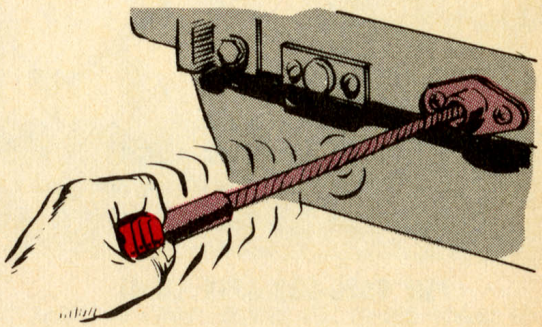
STARTER MAGIC FOR MULETEERS

A talking mule's entertaining, but a balking mule's downright exasperating, especially if it's the M274 Mechanical Mule. If she won't start when you want her to, no amount of cussin' will clear up the situation. But, like any mule, she can be coaxed to behave if you treat her right.

Next time you go to start the critter, go easy on the starter rope. Just give it

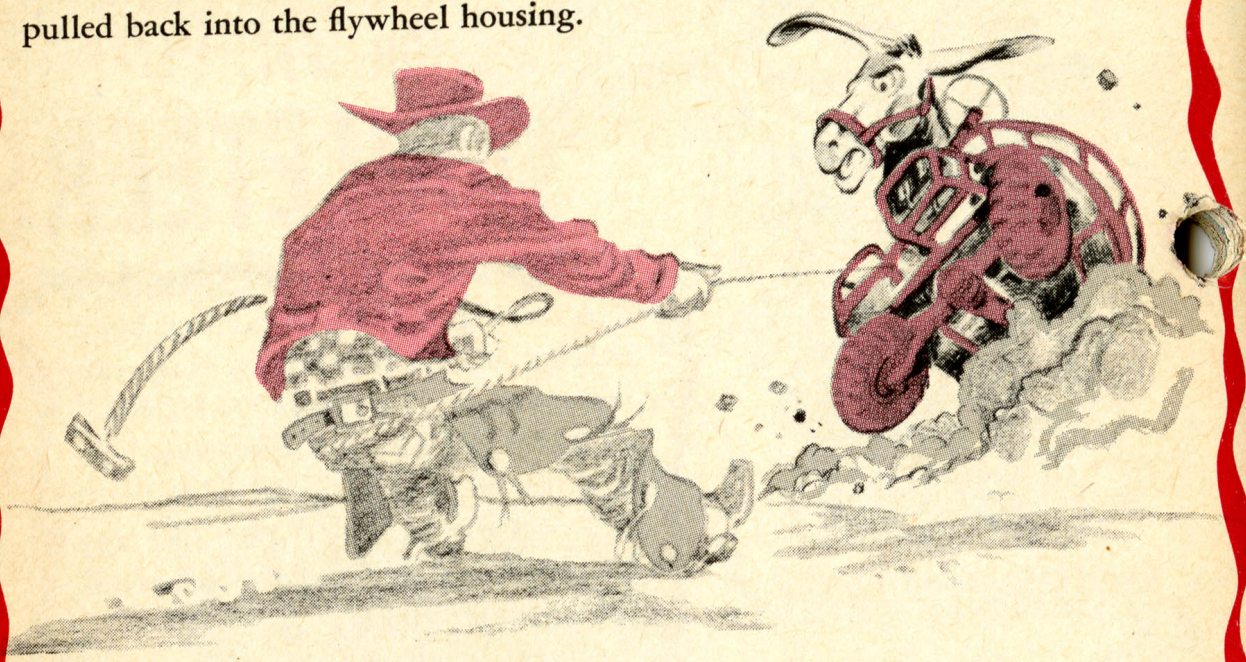


a couple of short tugs, until the dog engages, so when you're ready for the long pull, you won't tear things up.



When you're ready to give the final pull, make it steady—not jerky—and remember to keep the pull within arm's length, so the rope can rewind easy-like.

Another tip is to keep hold of the rope when it's rewinding—keep just enough tension on it so it won't kink up, or slip free of the quick-disconnect and get pulled back into the flywheel housing.



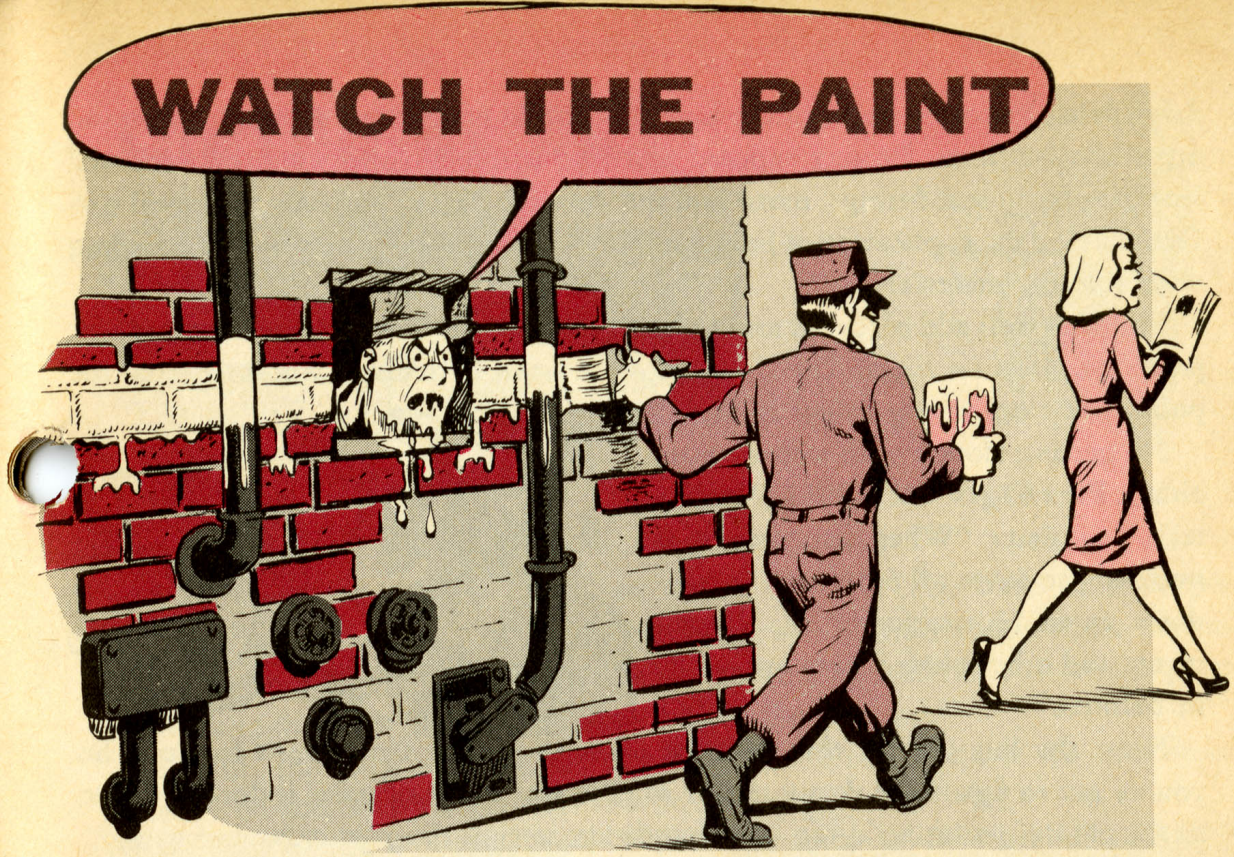
If you find it does kink enough so you can't pull it again, all you have to do is uncouple the two snap clamps near the quick-disconnect at the rear of the vehicle, reach in, and "unkink" it by hand.

To keep your rope in tiptop shape, always be sure the air cover is in place—this'll keep dirt and dust from getting at it. You can take a look-see when you're doing your other before-operation checks.

Every so often, like whenever the engine's pulled for maintenance, give the rope a shot of powdered graphite to keep it moving freely. You can order graphite by using this nomenclature: Graphite, dry: Lubricating, powdered (MIL-G-6711)...

FSN 9620-261-5792 (Ord)	3/4-oz
FSN 9620-251-7823 (Ord)	1 1/2-oz
FSN 9620-233-6711 (Ord)	1-lb

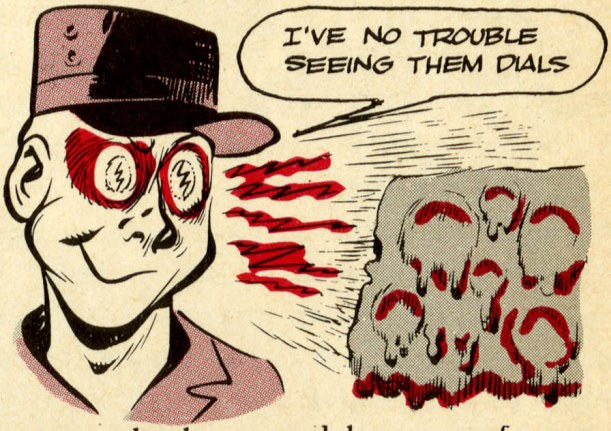
Keep your eye peeled for wear, too, especially at the front end of the vehicle where the rope rubs against the metal. When you see any fraying, order a new starter rope by asking for Rope, starter, engine, FSN 2990-698-6937.



Y'ever catch yourself turning into a brush-swinging paint-slapper? Hope not. That can get you in trouble with your favorite piece of equipment. Paint can put a good solid bind on parts that are supposed to bend or move... and there's no give in paint. Even more important, careless brush work can send your usage factor sky high on lots of parts.

Rubber parts, like the wiring in your ignition and lighting systems, are among the most paint-shy parts of any piece of equipment.

Then, there're glass parts that can really get fouled up by a stray flick of paint... like in sights, gages and windows. You can't see thru paint unless you've got X-ray vision like Superman.



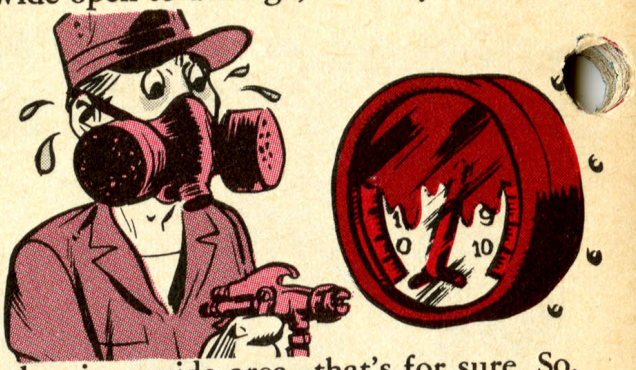
Paint doesn't mix with greases, either... so a leetle extree dab on any of your grease fittings isn't going to make your vehicles and other lubricated gear equipment feel too well. Gives 'em sick innards.

Getting down to brass tacks (don't paint 'em), it takes plain ol' mule sense to know what's meant for painting and what isn't. The way the Army feels about paint drippers is pretty obvious. Just check para 6a in TB 5-9715-1 (19 Jul 55). It says:

"Protect rubber, leather and related parts during the application of paint and/or preservatives by masking or covering with suitable material. Included are

drive belts, conveyor belts, brake hose, hydraulic hose, tires, grease fittings and other similar items. Protect exposed machine surfaces, roller chains, lubricated leaf springs, grease fittings, name and information plates, and other exposed surfaces during the application of paint and/or preservatives by masking or covering with suitable material."

Might as well add blackout and reflector lenses to this list. If they're not masked, paint can drop on them. Then, they're wide open to damage, not only from the paint, but from trying to get it off.



No getting sloppy with a spray gun, either. Para 82g of TM 9-2851 (Dec 47) tells you that: "When spraying it is necessary to cover all parts such as windows, gages, lubrication fittings, instruments and other parts which are not to be painted."

Now, the last part of this sentence takes in a wide area—that's for sure. So, you've got to figure the Army meant to give you a hint of parts it doesn't expect to see painted, without tying your hands by getting too particular.

Further along in the same paragraph of TM 9-2851, over on page 82, there's a mention of using bandages and socks to "protect rubber hose, ignition wires and flexible tubing."

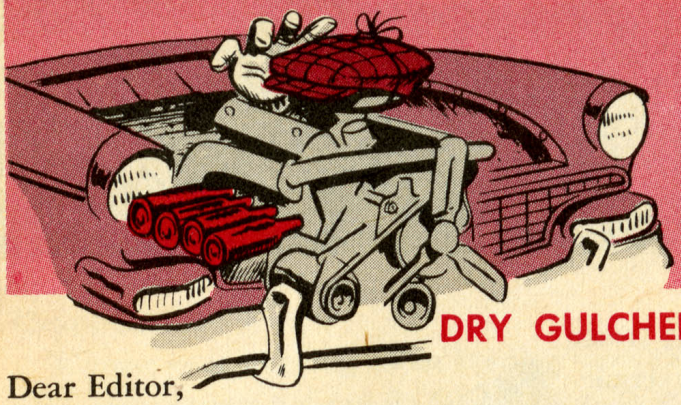
The reason the Army's so touchy about rubber items, in particular, can best be explained by referring to Ordnance Technical Instruction #360-2-50 (2 Mar 50), which warns against painting vehicle radio harnesses. The reason: Painting "hastens the deterioration of rubber." Makes sense, when you remember that most paints have an oil base in them.

Of course, all the parts mentioned need some sort of protection when the equipment they belong to goes into storage. Here's where the different coating compounds or preservatives come in.

You could say the difference between preservatives and paints is that preservatives usually protect equipment that's **not** being used. But when something needs paint, it should have it all the time.

So there's no over-all listing of parts that don't get painted—you just have to put the old noodle to work. In other words, just because you can't pick it up, don't paint it. It may deserve a salute instead.

CONTRIBUTIONS

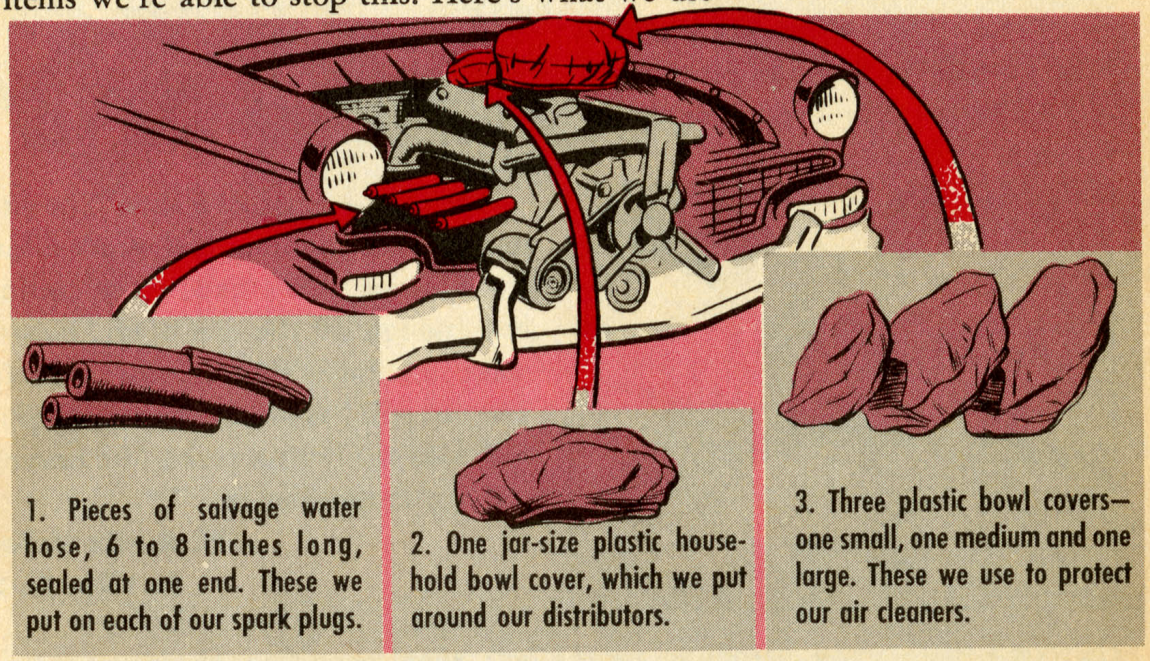


DRY GULCHED

Dear Editor,

You know, in this sharp outfit, our drivers like to keep their vehicles spic and span—and that goes for the engines. So, every so often, they clean the engines down with water and solvent. Only trouble is—some of the engine parts get wet and the vehicle's tied up for awhile till they dry out.

So, with the help of some salvage hose and a few five-and-ten cent store items we're able to stop this. Here's what we use—



1. Pieces of salvage water hose, 6 to 8 inches long, sealed at one end. These we put on each of our spark plugs.

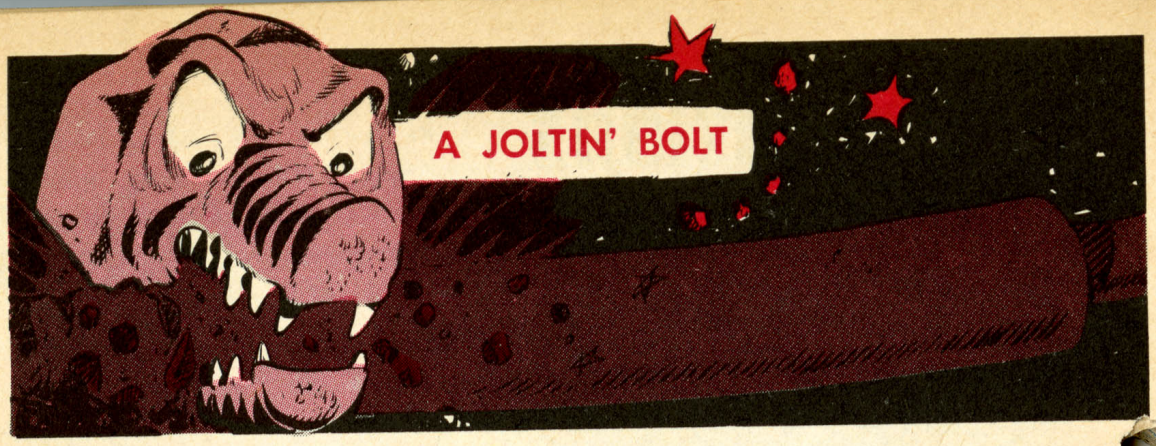
2. One jar-size plastic household bowl cover, which we put around our distributors.

3. Three plastic bowl covers—one small, one medium and one large. These we use to protect our air cleaners.

Now, when we use water and cleaning solvent we don't have to worry about wet engine parts and clogged air cleaners. Nice and clean.

Sgt. Thomas R. Murphy
Fort Dix, N. J.

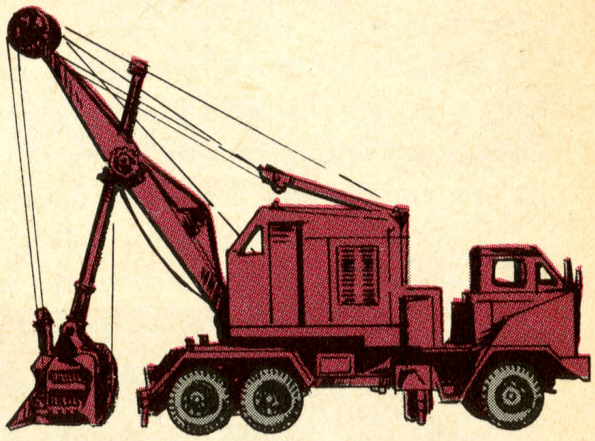
(Ed Note—Right you are. But, of course, you don't have to use this gimmick in your M-series wheeled vehicles. After all, they are waterproofed. Comes in handy, tho, on your non-waterproofed commercial vehicles.)

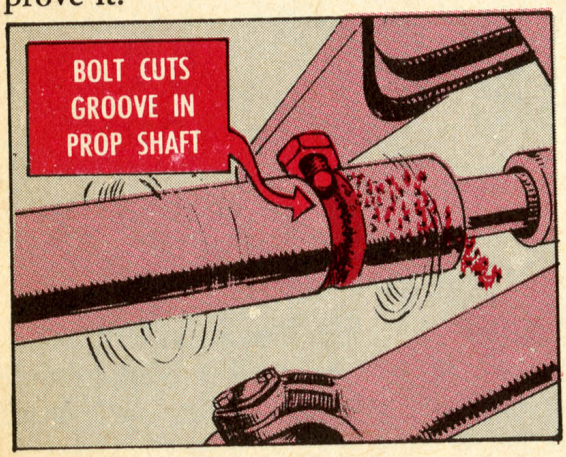


Dear Editor,

A torque arm bolt under the frame of our 20-ton truck-mounted crane-shovel rides against the propeller shaft of the rig when it's running. The crane is mounted on a FWD Model MUC 6x6 carrier.

When the crane's not operating it looks like the bolt has enough clearance, but when we run the crane the bolt vibrates against the prop shaft—and we've got a groove in the shaft to prove it.





The bolt's snug like it should be—it's just that it's too long and won't allow any clearance. We fixed it by cutting just enough off the end of the bolt to make sure it won't rub against the shaft. The nut still has plenty of room to grab and hold the bolt in place. We haven't had any trouble since.

SFC Austin McBee
Fort Dix, N. J.

(Ed Note—Before you go lopping off the bolt, there are a few things you should check out first. Look for looseness in the walking beam [trunnion] bearings and saddle sleeve, and looseness of the walking beam ball sockets. That could allow the axle assembly to shift enough for the bolt to ride against the shaft. There should be only 1/16-in free play at these points.

While you're at it, take a gander at the pillow block mountings and bearings. If they're worn, they could let the shaft move while the rig's operating. One more thing—wear on the tapered portion of the torque rod bolt and not enough shims in the torque rod ball will also let the threaded portion stick out too far.

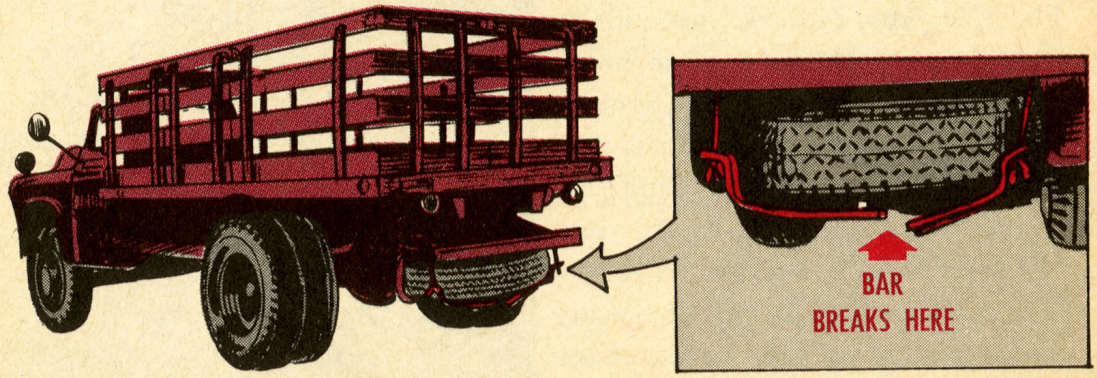
Better check out all your FWD Model MUC 6x6 carriers for the same trouble. If it looks like you're going to have prop shaft trouble, call in your Engineer support unit pronto. Let them take it from there.

At the same time, you want to follow through with a UER, DA Form 468. That's real important. Sure, your rig has had the best of engineering, but a lot can happen to it in the field. It's your suggestions that lead to improved models.)

JIMMY TIRE HANGER

Dear Editor,

We saw your warning about keeping the GMC Model 424 2½-ton stake truck spare tire carriers tight in PS 60, but in spite of our getting on 'em real quick, we find that the rear bars still break in the center.

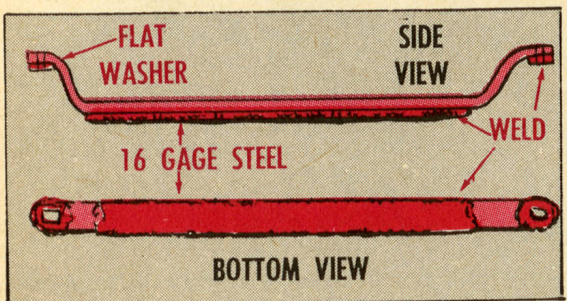


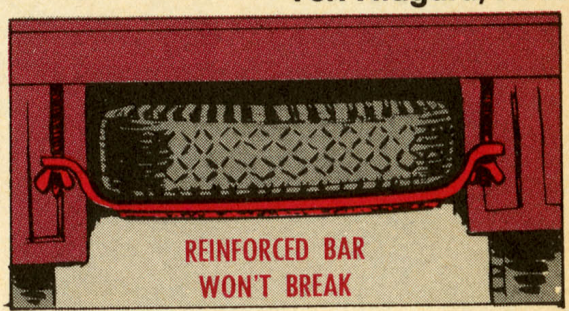
After one of our tires came out right in heavy traffic, we decided something had to be done. Fortunately it didn't hit anybody, but think what could have happened.

So we welded a piece of 16-gage steel across the bottom of the channel, making it a box section, and also welded big washers at the bolt holes at each end.

This doesn't change the looks or function of the bar enough to speak of, but none of ours have broken since we beefed 'em up.

Ellwood W. Hagen
Fort Niagara, N. Y.





(Ed Note—First, see if your support unit can get you a new one from the local dealer. If not, you're OK to beef up the bent one. And always always always be sure they're installed tight, real tight.)

NEED SUPPORT?

Dear Editor,

That idea for a lug wrench rest for the G741 and G742-series trucks in PS 56 gave us the idea for this support which is used on the heavier vehicles—5-tons, 10-tons and the like.

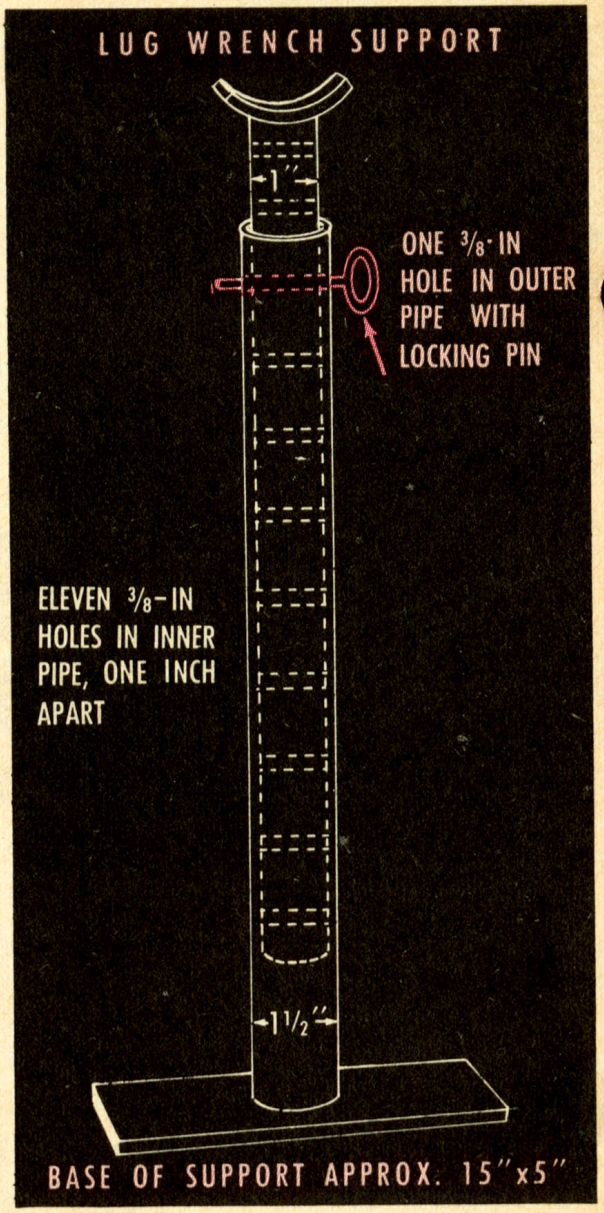
All it takes is two pieces of pipe—one 1-in and one 1½-in. It can be made to any height. Ours, when the inner pipe is fully extended, comes to 28 inches—which we find OK for any of the trucks we have.

The 1-in pipe, o'course, goes inside the 1½-in pipe. Drill 11 ⅜-in holes, 1 inch apart, in the inner pipe. The outer pipe takes just one ⅜-in hole near the top. Fit the holes with a locking pin. The base for the support, by the way, is 15 inches long by 5 inches wide.

With this set up, the end of the lug wrench is placed on the crescent shape piece for support. Then the guy removing or putting a tire back on can really put his weight behind his ordeal. The support'll hold all and give him plenty of leverage.

Whatja think?

Erwin Wiesen



(Ed Note—Until that new wheel-stud wrench set, FSN 5180-378-4411, is issued to you as part of your 2d echelon organizational maintenance tool set, No. 1 Common, you'll have to use the old stud wrench set, FSN 5180-357-9228. Your support, then, will really come in handy around the motor park.)

Connie Rodd's BRIEFS

Scratchin' straps

Your M11 carrier straps shouldn't be stored in the carrier along with your M9A1 protective (gas) mask. Those straps have some snaps on 'em that can scratch eyepieces and ruin the faceblank of your mask.

Regulator regulation

The internal plumbin' of your 100-ampere AC charging system regulator is strictly out of bounds—so keep your stubby fingers out of that box. The only thing you're supposed to do is adjust the voltage output. Which you do with a screwdriver through the pipe-plugged hole. (And put the plug back in.) Any other maintenance on the regulator belongs to your support unit.

Go ahead

Still holdin' back on those Quartermaster MWO's 'cause DA Cir 750-15 (14 Nov 57) said so? Well forget about it, and charge ahead on the MWO's according to priority—just like before. The circular has been rescinded by DA Circular 310-30 (6 Feb 58).

TB's the thing

Do you have a copy of TB 9-5001-2/3 (15 Oct 57) at your Nike-Ajax site? The TB tells you how to call a halt to corrosion and seizure of the missile and target tracking antennas' lens mounting-bolts. It's worth looking into.

Your knobs threaded?

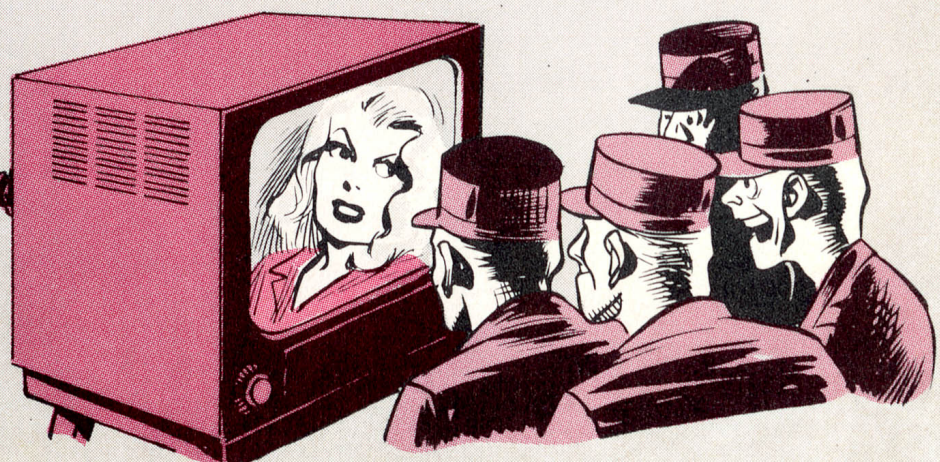
The time may come when you have to order a gear-shift hand-control lever knob, FSN 5355-532-8137, for your G749-series 2½-ton truck. And, the time may come when you get one from supply. But, before sweating to put it on your truck, make sure that knob is threaded—make sure it's the screw-on type. A few have been seen in the field without threads—and, man, you just can't make 'em stay put.

Only one radome paint

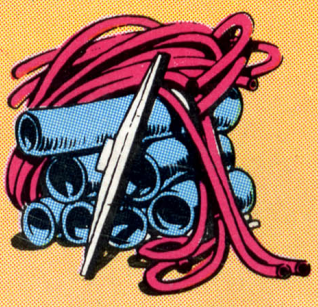
There's been talk that you use more than one type of paint on the acquisition antenna radome of your Nike-Ajax or M33 systems. That's not so. There's only **one** paint to use on your acquisition radomes and it's FSN 8010-297-0586 (Eng 52-3476.017.100)—a non-metallic enamel, synthetic, OD, eggshell gloss, with Fed spec. TT-E-529 Class A. You can find it in ORD 7 SNL F342 on page 22. Any other paint is strictly no dice.

They belong together

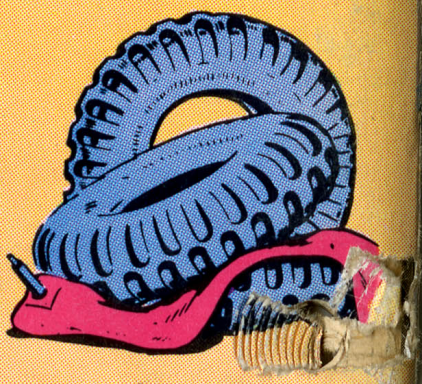
You don't want to let the M13 or M13A1 ballistic computer leave your M48-series tank by itself. No sir. Whenever the computer is removed, the mount at the bottom of it goes along, too. The mount is a component of the computer. And a replacement computer is always supposed to come equipped with a mount.



OIL AND GREASE ARE



POISON FOR RUBBER



KEEP OIL AND GREASE OFF RUBBER PARTS!